

AUTOMOTIVE | AEROSPACE | FOOD & BEVERAGE | FLUID TECHNOLOGIES | MOBILE MACHINERY

FRANCEJOINT

SEALING SYSTEMS



PISTON
SEALS





FRANCEJOINT

SEALING SYSTEMS

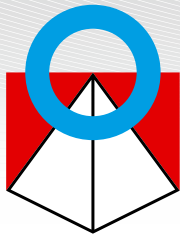
Contents

○ HYDRAULIC SEALS

1	Introduction.....	6
2	Environment.....	7
2.1	Friction/lubricant relationship.....	7
2.2	Temperature.....	7
2.3	Operating and drag pressure.....	8
2.4	Speed.....	8
2.5	Hydraulic fluids.....	9
2.6	Viscosity.....	10
3	Examples of applications.....	11
4	Assembly recommendations.....	18
4.1	Assembly 2.A - Piston composite seal - Closed groove.....	18
4.2	Assembly 2.B - Lip seal, piston compact seal - Closed groove.....	20
4.3	Assembly 2.C - Piston seal - Open groove.....	20
5	Storage recommendations and lifespan.....	21
6	Piston seals.....	22
7	Other profiles.....	102

Site n°1: Compression Molding – Injection Molding
– Water Jet Cutting – Finition – Quality Control – Logistics

Site N°2: Administrative Area – Research & Development – Machining – Tooling



FRANCEJOINT
SEALING SYSTEMS

Since 1981, FRANCE JOINT – SEALING SYSTEMS has been designing, manufacturing and distributing seals and precision rubber parts for its customers for whom quality is a determining factor.

Faced with tough competition among the big decision-makers of the industrial world, FRANCE JOINT has responded with innovation, research and development, experience in Best-Cost manufacturing, and a consistently high level of quality, thanks to certificates ISO 9001 and ISO/TS 16949.

Today, FRANCE JOINT is working in close collaboration with its customers, meeting challenges head on with success. Automotive, Aeronautics, Mobile hydraulics, Beverages & Foods, Fluid engineering industries... every solution emerges from a uniquely individual partnership, constantly fostered and renewed.

Our prime objective, based on unrivalled quality, is to find

the most suitable solutions for ensuring that you will stand out in what has become an extremely competitive domain. Our position of excellence has led us since the birth of our company to acquire the tools necessary to anticipate and prevent risks and maximize our service; the ultimate objective being of course to help you keep ahead of developments in this more and more technological market.



AUTOMOTIVE



AERONAUTICS



BEVERAGES & FOODS



FLUID ENGINEERING



MOBILE HYDRAULICS



Compression molding



Injection molding



Machining / Tooling



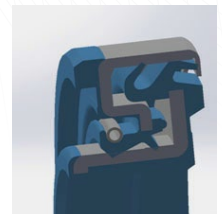
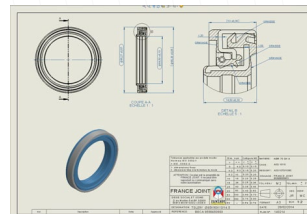
Logistics / Packaging

RESEARCH & DEVELOPMENT

Innovation, reliability, safety, minimization of risk: your expectations are our daily concern. To get from the idea to the finished product demands firm managerial control over a wide range of projects in addition to expertise in manufacturing.

FRANCE JOINT's contributors, who are as much inventors as technicians, get the best of fully automated, state-of-the-art technology that takes them from drawing-board to prototype and finally to assembly line. From writing specifications to putting on a major technical event through designing (3D Solidwrks software) and testing for validation and compliance, FRANCE JOINT engineering works hand in hand with you to find the best solutions guaranteeing the level of expected performance.

More than 1000 compounds integrating elastomers, PTFE materials, Polyurethane, or even thermoplastics, as many solutions vis-a-vis the new most complex requirements which will put you in pole position today so that we can all be winners tomorrow. FRANCE JOINT puts in place qualifications in order to examine the behavior of its seals according to various parameters intervening on frictions, pressures, temperatures, speeds, strokes, leakages...



QUALITY IN OUR CONCERNS

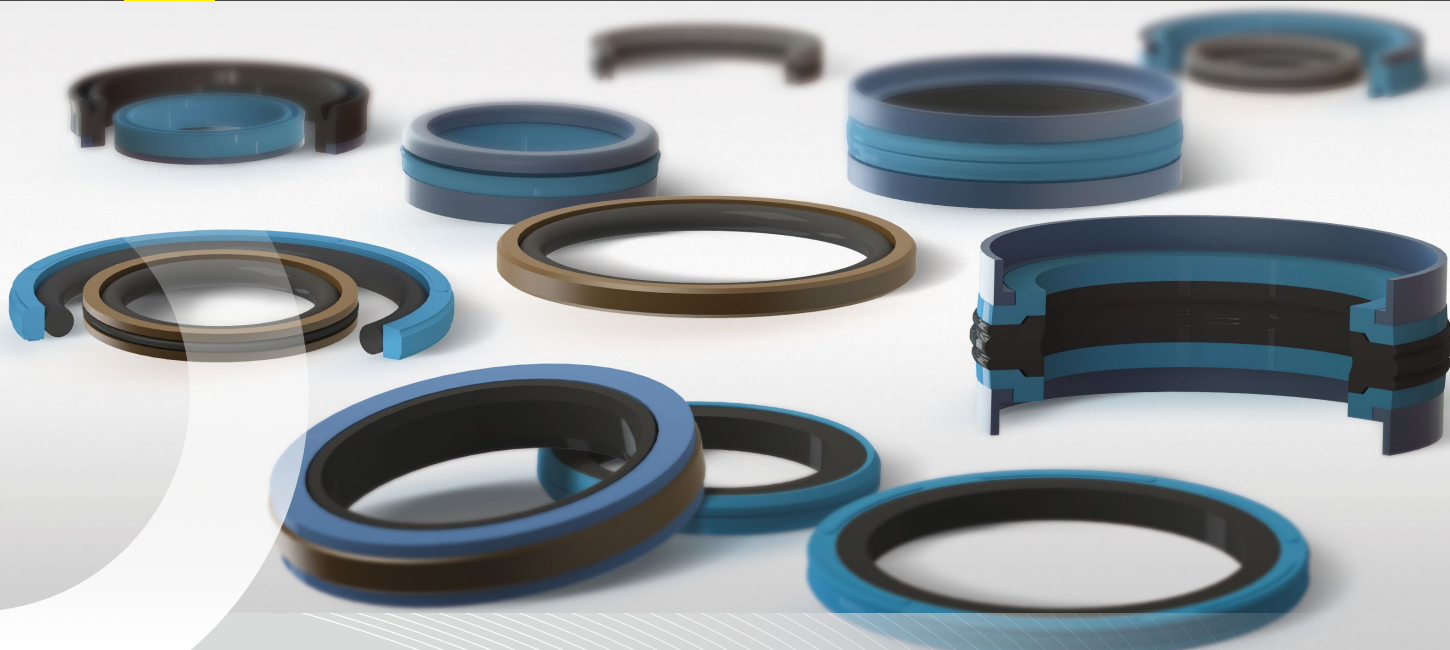
Several certificates obtained, ISO 9001, and ISO/TS16949, testify to the quality department's commitment to constant progress at every level of the company, at all stages of the realization, particularly where continual improvement is what has made FRANCE JOINT the name it is today.

Ambitious with customer satisfaction a priority, FRANCE JOINT has thus obtained the most powerful methods (PPAP, AMDEC, value analysis, Audits, MRP, 8D analysis, SPC, R&R ...) in order to optimize simultaneously the capacity of machines and processes, operational manpower performances, organizational methods, and finally, product and financial results.

FRANCE JOINT guarantees the best technology and pursues its daily objectives of a "Zero defects" production, through physico chemical controls (rheometer, spectrometer, durometer...), through dimensional and final aspects (unit controlling equipment, 3D camera ...). This is because the search for competitiveness is as important as the search for continuous improvement.



3D test device



○ HYDRAULIC SEALS

1. Introduction

There are a number of sealing systems designed for all types of machines, ranging from the simplest to the most complex and depending on field of application. Correctly defining the functional parameters is an essential step in the choice of sealing system and the materials that should be prioritised; each profile and material is designed to meet the specific and varied stresses of different hydraulic systems, including hydraulic cylinders. Working closely with its customers, FRANCE JOINT actively participates in development projects, using its expertise and recommendations to select sealing components.

As critical elements in the correct operation of hydraulic machinery, sealing systems must meet increasingly specialist technical requirements:

- wear resistance
- compatibility with media
- resistance to the effects of temperatures
- resistance to pressure
- resistance to speed
- reduced friction loads

In certain fields of application, typically in heavy-duty mobile machinery where requirements are very important, a single seal is not compatible with all types of stress; that's why FRANCE JOINT offers a wide range of sealing systems. All of these sealing systems are designed for heavy-duty rod applications, and are configured as follows: a buffer seal, secondary seal, wiper seal and guiding components; for the piston part: a piston seal and guiding components.

Hydraulic seals must contain the fluids and maintain the hydraulic pressure (piston seals, rod seals, static seals), to stop the inlet of impurities and to maintain the lubricating film on the rod (wiper seals), and to resist any deformation under a radial load by guiding the piston and rod (wear rings and guide strips).

2. Environment

2.1 FRICTION/LUBRICANT RELATIONSHIP

When hydraulic machinery is in operation, there are different phases of friction until a lubricating film is formed. The thickness of the lubricant film, which is located between the seal and the contact sliding face, greatly influences the nature of the friction. There are different phases of friction as the hydraulic system reaches its operating speed.

The first is a dry friction between the seal and the contact mechanical part, which has a significant force called adhesive friction, and which takes shape during system start-up.

As the system accelerates, a lubricating film forms little by little between the seal and the contact mechanical part, which considerably reduces friction. This is a mixed friction located between the seal and the lubricated mechanical part.

Finally, as the speed continues to increase, so does the force of the friction, transforming it into a viscous friction between two bodies with a hydrodynamic lubrication.

These different phases remain similar for all types of operation, but at different levels for each material used.

The diagram below indicates that PTFE is recommended for lower pressures and speeds, as it reaches the viscous friction phase more quickly.

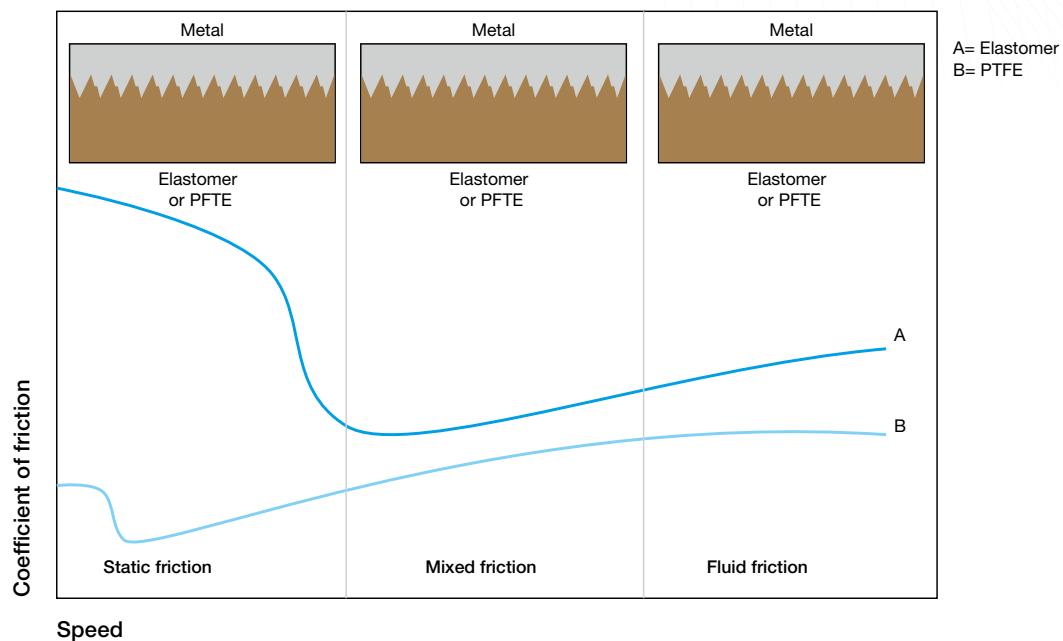


Diagram 2.1-1

2.2 TEMPERATURE

The temperature of the hydraulic fluid as well as the surrounding temperature plays a determining role in the choice of material. The ideal temperature for optimal seal operation is between +30°C and +60°C. However, the choice of material must also be determined, taking into account the heat created at the point of contact on the sealing lip under friction. When using hydraulic cylinders, the temperature usually reached is +80°C and, in extreme cases, +110°C.

When the temperature increases, the seal's material becomes more elastic and its resistance to deformation is reduced. That's why we have developed seal profiles in which the sealing lips are pre-stressed by the inclusion of a metal spring or O'Ring. For temperatures that exceed +100°C, FRANCE JOINT offers special materials, including HNBR – FKM – high-temperature PU – PTFE, among others.

On the other hand, when the temperature is reduced to negative values, the seal's material has a tendency to harden and become less elastic. However, the seal's operational safety is not really influenced by the increase in fluid viscosity. For temperatures that could go lower than -40°C, FRANCE JOINT offers special materials, including NBR – FKM – HNBR – PU – PTFE.

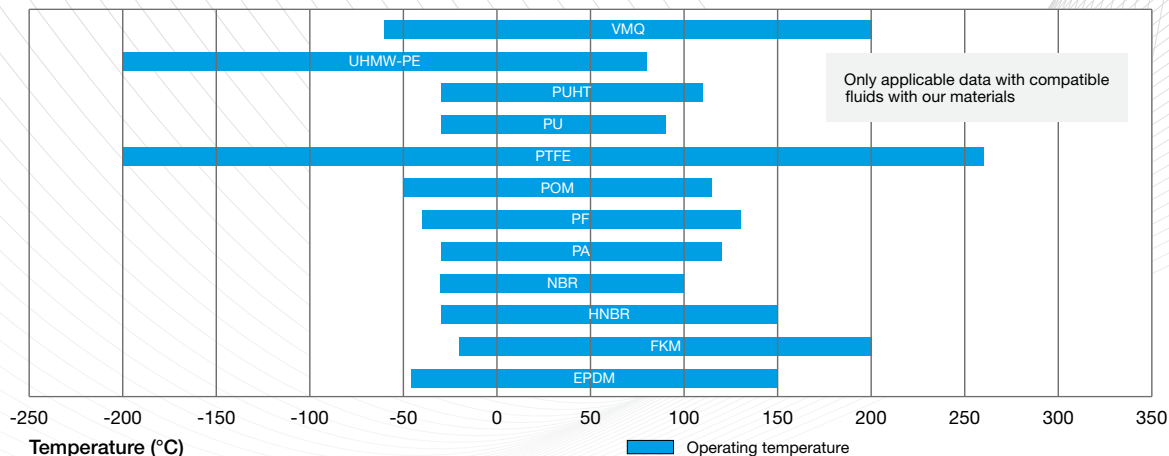


Table 2.2-1

2.3 OPERATING AND DRAG PRESSURE

Pressure is a determining factor to be taken into account when choosing the seal and material hardness. Along with the cylinder size, the pressure of the hydraulic system determines the thrust. From one application to another, we consider the pressure exerted to be defined as:

- **Machine tools:** 8 – 16 MPa
- **Material handling - Lifting:** 16 – 25 MPa
- **Hydraulic presses:** 16 – 28 MPa
- **Construction – Mining – Heavy industry:** 28 – 40 MPa

In certain applications, fluctuations in very high point pressures can appear – mechanical impacts, water hammer – particularly in mobile machinery. FRANCE JOINT offers strong seals designed to efficiently cope with such stresses.

Moreover, when gaps are very tight at the guide in a fitting such as a hydraulic cylinder, hydrodynamic pressures, also called drag pressures, may be generated. With a much smaller gap between the guide and the rod, and a constant flow rate, additional pressures (which can reach up to several dozen MPa) can appear in front of the seal, causing it to deteriorate.

**THIS PRESSURE INCREASE
IS EXPRESSED BY THE FOLLOWING FORMULA:**

$$\Delta P = p_1 - p = \frac{6 \times \eta \times v \times L}{Hs^2}$$

P: pressure
η: dynamic viscosity of the fluid
v: speed
L: length of the guide
Hs: radial extrusion gap

There are ways to prevent the formation of such drag pressures. Helicoidal grooves are provided with a section that is larger than that of the seal; this is in order to prevent the premature destruction of the seal and certain mechanical parts. For BECA 005 – 006 – 007 wear rings, an opening has already been created, preventing the creation of return ducts.

2.4 SPEED

The choice of material is also determined by the system's operation speed. The rubbers and polyurethanes in friction against the moving surface can withstand speeds between 0.1 m/s and 0.5 m/s. For PTFE materials, speeds up to 5 m/s, or even greater, are permitted. For particularly low stresses, the speed can be limited to up to 0.05 m/s, increasing the friction and limiting the formation of lubricating film.

In such conditions, "stick-slip effects" may appear, which are defined as jerking movements caused by a succession of slipping phases followed by sticking phases.

To guard against such effects, FRANCE JOINT has developed a suitable range of seals, where the parts subject to friction are made from PTFE with optimised geometries. Other special materials are also available, such as PE-UHMW.

2.5 HYDRAULIC FLUIDS

a. Introduction to oils

Fluid holds a prominent place in the hydraulics field. It encourages:

- the transmission of power to different working components (transmission of energy as pressure)
- the lubrication of mechanical parts to limit the amount of wear on moving parts
- the protection of the entire hydraulic system
- the removal of heat

The hydraulic fluid most commonly used is mineral oil. Water is the ideal hydraulic fluid (low compressibility, non-flammable, negligible cost) if it does not present serious drawbacks (corrosion, lubrication fault, etc.) to the operation of machinery. A significant number of fluids are used to meet specific requirements. There are:

- mineral oils
- fire-resistant oils
- biodegradable oils

b. Oil classification

Mineral oils

ISO Classification	Properties	Applications
HH	Additive-free mineral oil	This oil only ensures energy transmission and is rarely used today
HL	Oil + additives with antioxidant and anti-corrosion properties to combat ageing	This oil is used for low-stress environments and works very well with water
HM	It has the same features as HL coupled with anti-wear properties to encourage resistance to wear and loads	This oil is heavily used for significant pressures
HLPD	It has the same features as HM coupled with detergent additives	This oil is heavily used for significant pressures with water intake
HR	It has the same features as HL coupled with an improved tolerance to viscosity/temperature	This oil is used during major temperature fluctuations
HV	It has the same features as HM coupled with an improved tolerance to viscosity/temperature	This oil is used during major temperature fluctuations and at low temperatures
HS	Synthetic oil without special fire resistance properties	Special properties
HG	It has the same features as HM coupled with additives to improve its anti-stick-slip properties	This oil is used for machines where lubrication is common to hydraulic parts, rails and joints
HD	Oil + additives for antioxidant, anti-wear and detergent properties	This oil is heavily used in mobile hydraulic systems and in engines

Fire-resistant oils

Group	Temperature	Properties	Applications
Aqueous fluids			
HFAE	+5°C to +60°C	Oil-in-water emulsion with more than 80% water (generally 95 - 98%)	These oils are used in hydraulic presses and in systems where leaks are significant
HFAS		Synthetic oils in aqueous solution with more than 80% water (generally 95 - 98%)	
HFB		Oil-in-water emulsion with more than 40% water	This oil is little used today aside from in the United Kingdom
HFC	-30°C to +60°C	Polymer solution (polyethylene glycol or polypropylene glycol) with more than 35% water (less than 80% water)	This oil is used in industrial environments with a maximum temperature of +60°C and average stresses

Group	Temperature	Properties	Applications
Non-aqueous fluids			
HFDR	-30°C to +150°C	Phosphoric ester base, free from water	This oil is used for significant stresses and for very high temperatures
HFDU		Synthetic fluid with specific composition	
HFDS		Chlorinated hydrocarbon base, free from water	
HFDT		HFDR and HFDS mixture	

Biodegradable oils

ISO Classification	Properties	Applications
HETG	Vegetable oil	This oil is used in the agriculture and forestry sectors
HEPG	Polyglycol	This oil is used in water protection areas
HEEG	Synthetic ester	This oil is mainly used in construction machinery

c. Impurities and air in oil

A fluid's cleanliness is an important factor in optimising the operation of a hydraulic system. Limited hydraulic filtration will lead to a disruption in the mechanism, which is caused by impurities. These impurities have multiple guises, such as metal shavings and other abrasive particles, silica, external dusts, oxidised products (rust), etc. and can lead to premature seal deterioration. It is therefore essential to perform regular checks and reconditioning on filtration systems.

Moreover, the air in the oil can lead to a breakdown of the seal through a phenomenon known as micro explosions. Hydraulic fluids actually contain air particles dissolved in the oil, which will compress and connect as the pressure increases and will tend to relax and escape when the pressure lessens. These particles are always positioned between the seal and the spaces in the groove and closest to the gaps formed by them.

This simultaneous compression and relaxation of air particles in the oil will heat up their epicentre, suddenly increasing the temperature and provoking self-ignition, also known as the "diesel effect".

If this occurs regularly enough, it can lead to the destruction of the back of the seal and even the destruction of mechanical parts and guides as they are blasted and burned. To prevent such risks, it is imperative to bleed the hydraulic systems to limit these micro explosions.

2.6 VISCOSITY

The viscosity determines a hydraulic fluid's capacity to flow. It is, essentially, the resistance that the fluid's molecules encounter, and they move by sliding between each other. The term used today is "fluidity".

Factors that will influence viscosity are essentially temperature and pressure. ISO standard 3448 classes all industrial oils according to their viscosity, expressed in mm²/s at a reference temperature of +40°C.

As the temperature increases, the viscosity has a tendency to decrease. On the other hand, the viscosity can increase when the temperature decreases. A continually increasing pressure can also lead to a continually increased viscosity. Generally speaking, we consider that at a consistent temperature, the viscosity follows a very marginally exponential curve, depending on the pressure.

IT CAN BE EXPRESSED USING THE FOLLOWING FORMULA:

$$\Delta V = 0.003 \times p \times VO$$

p: pressure in MPa

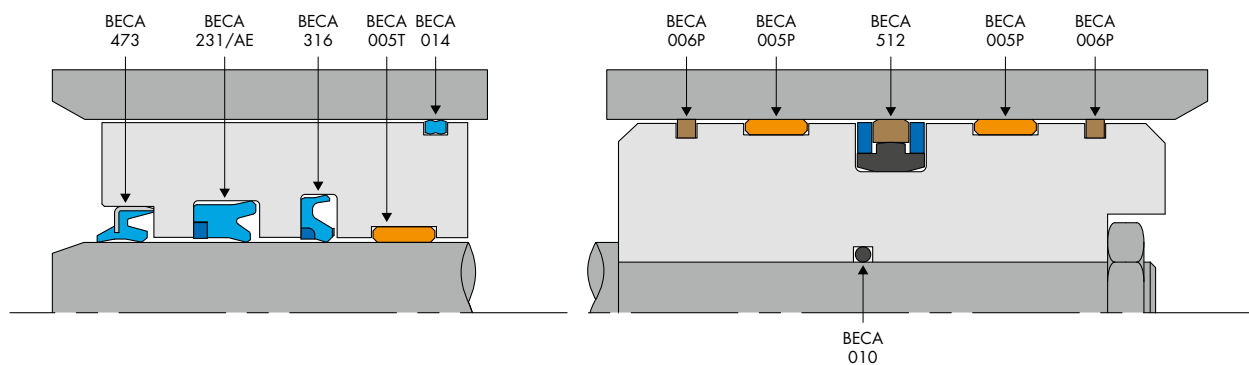
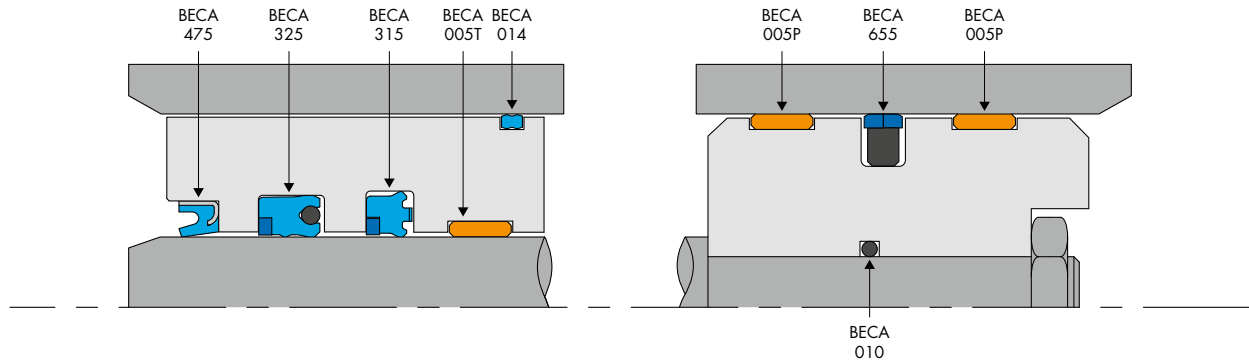
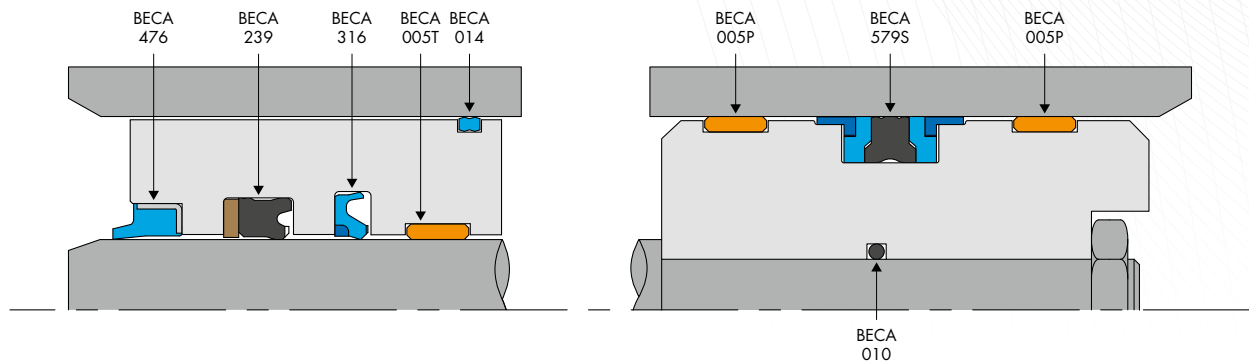
VO: viscosity at atmospheric pressure

The Viscosity Index (VI) measures the viscosity fluctuation with the temperature. Oils with high viscosity indexes are less dependent on temperature.

3. Examples of applications

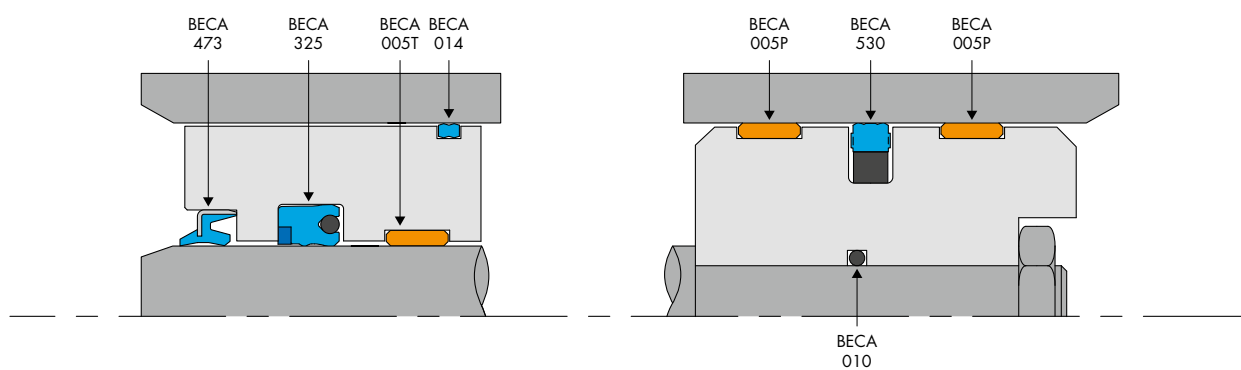
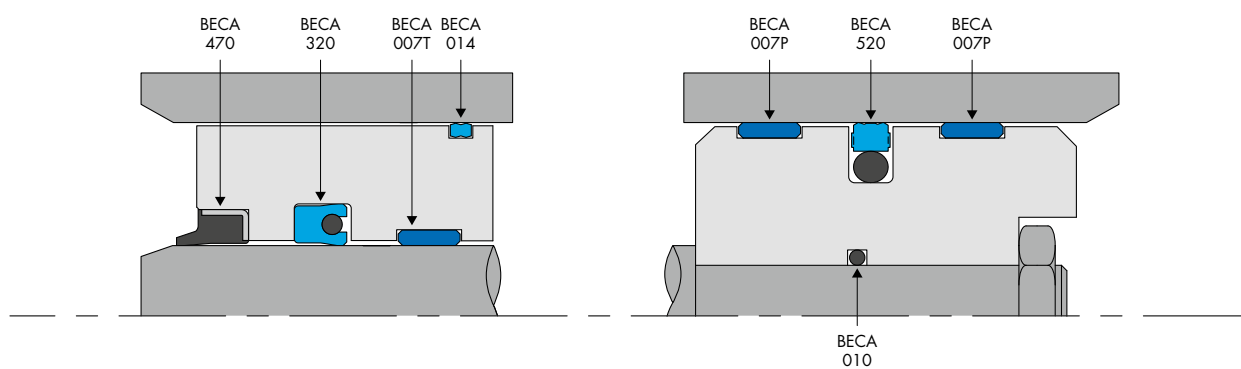
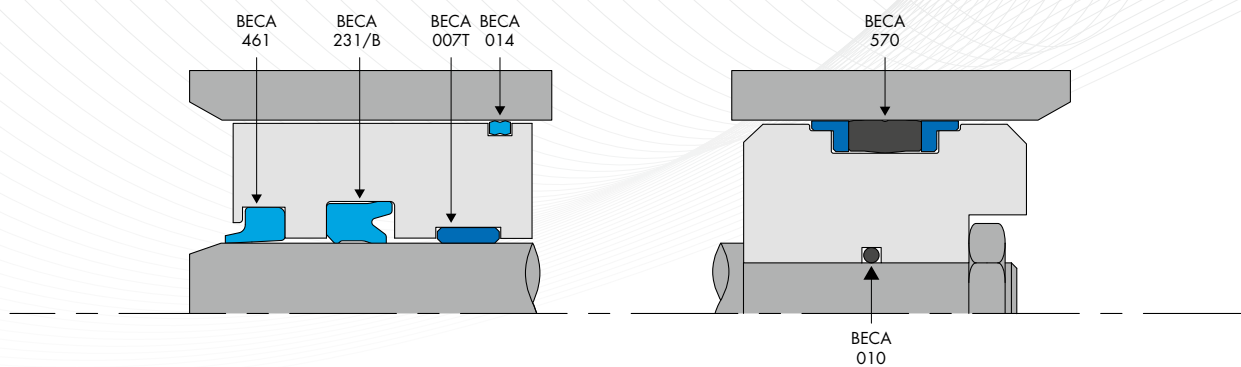


CONSTRUCTION



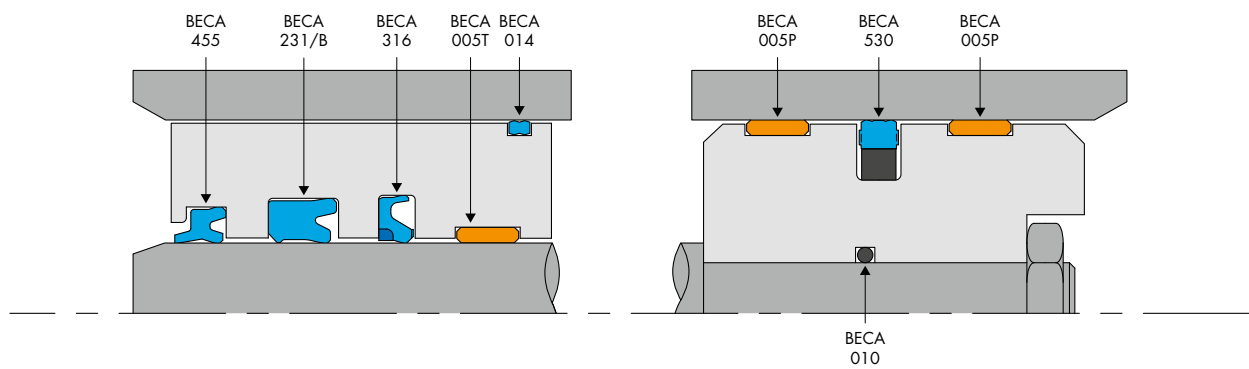
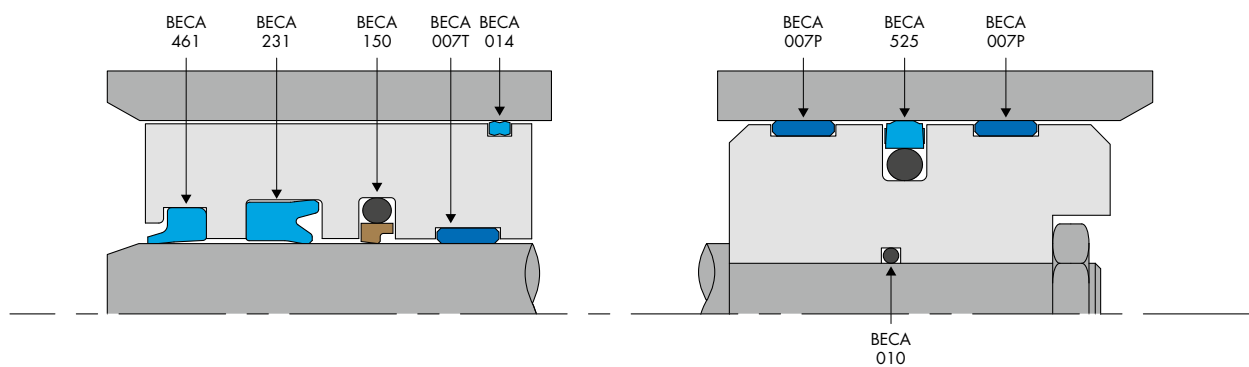
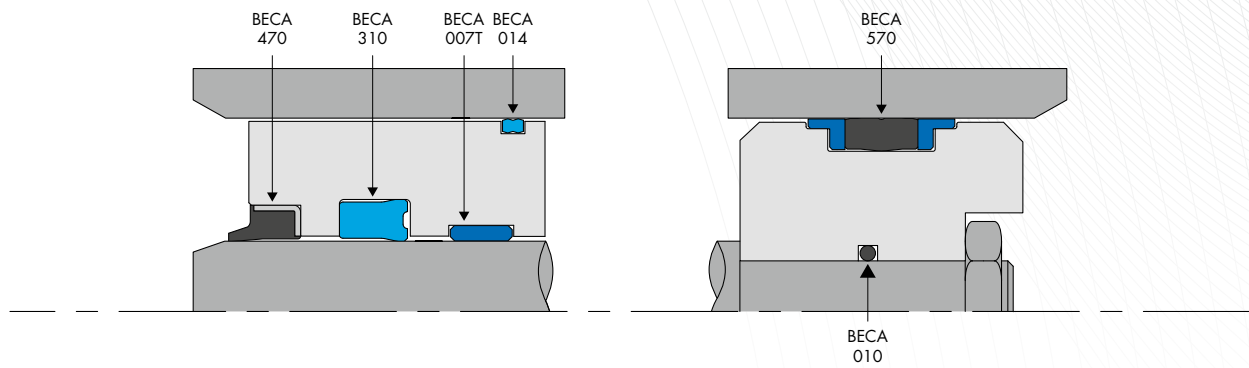


AGRICULTURE



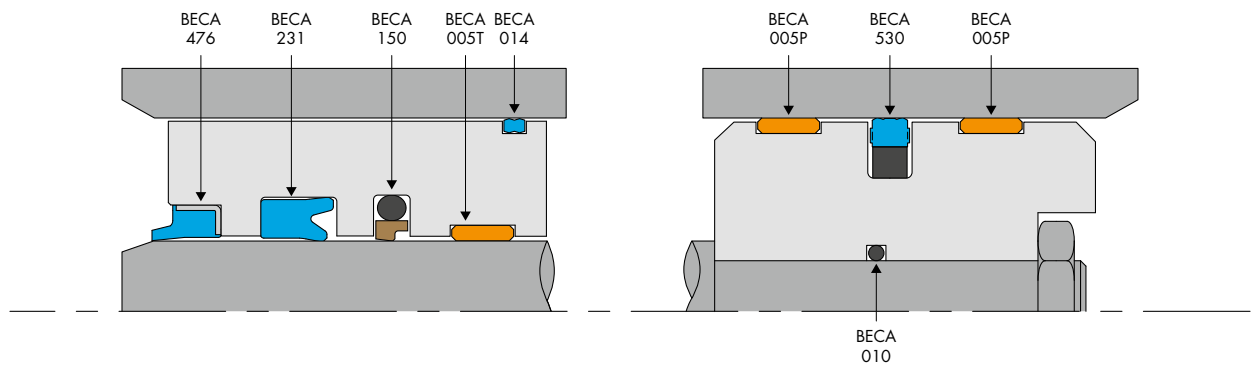
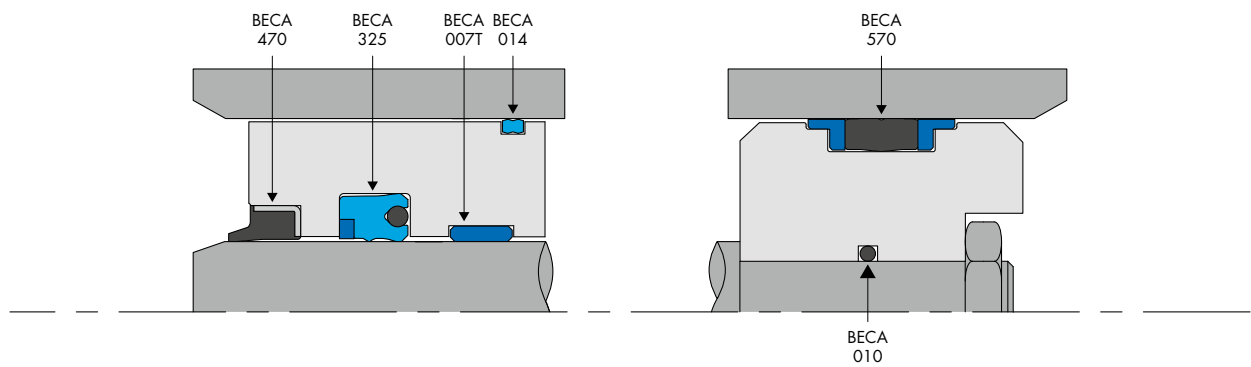
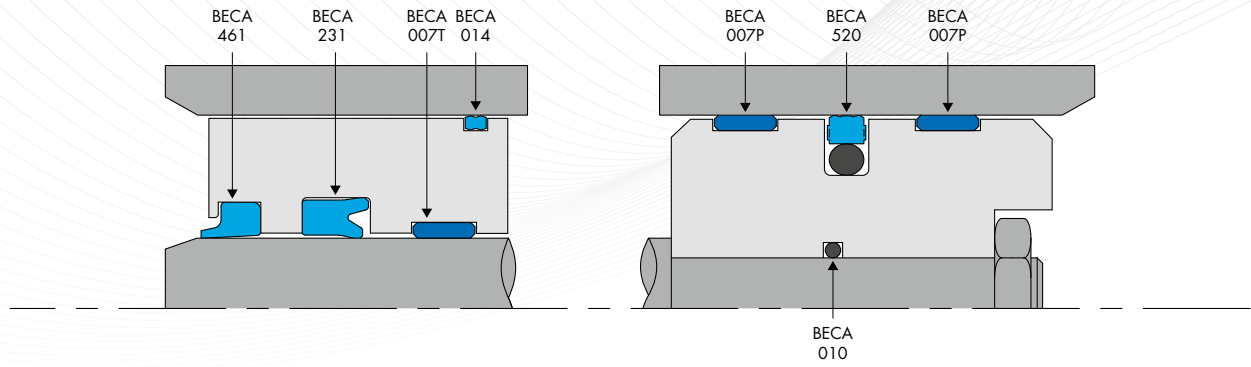


MATERIAL HANDLING



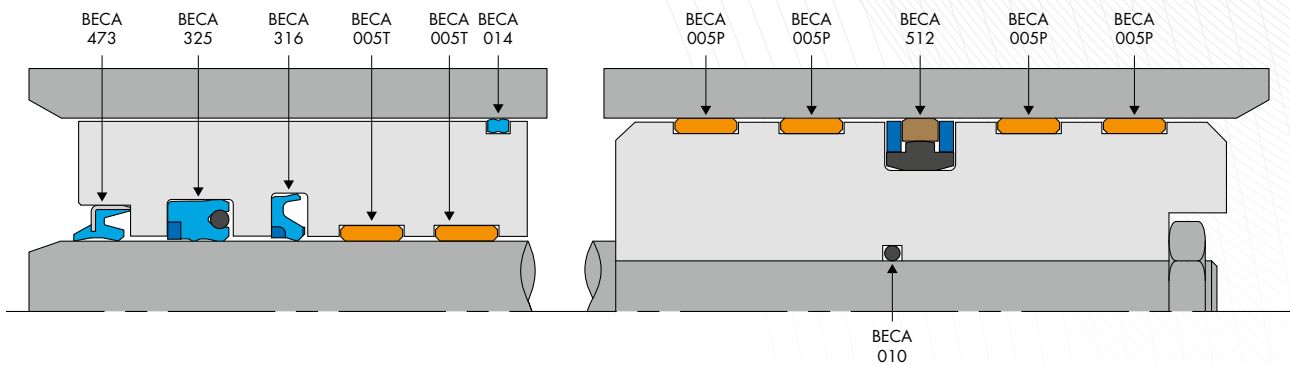


LIFTING

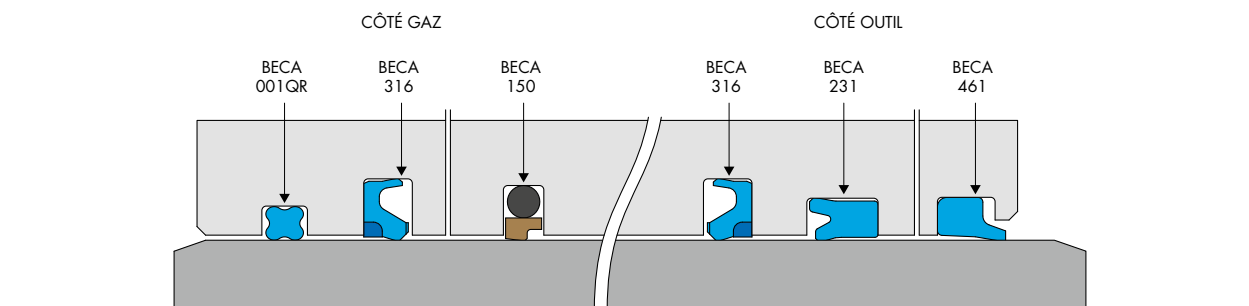
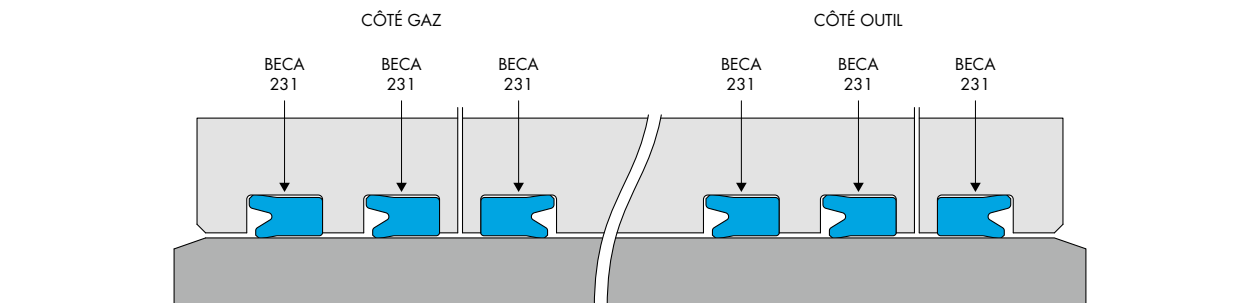




MINING

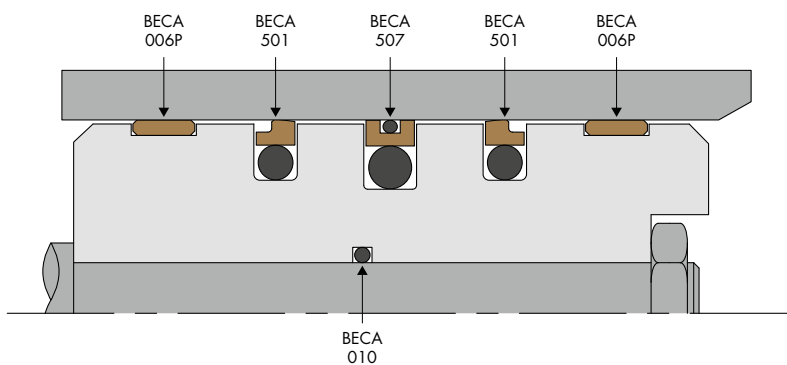
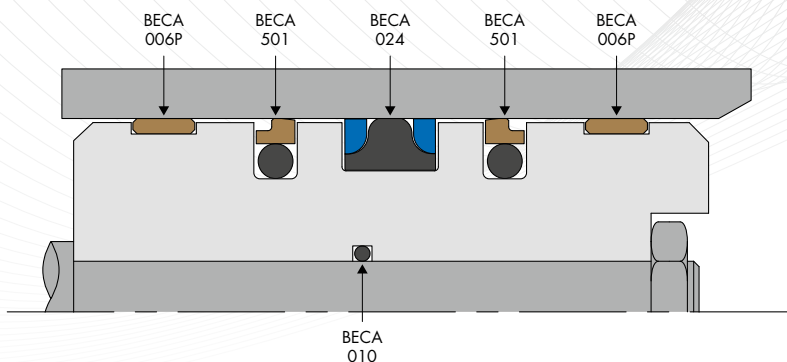


HYDRAULIC BREAKER

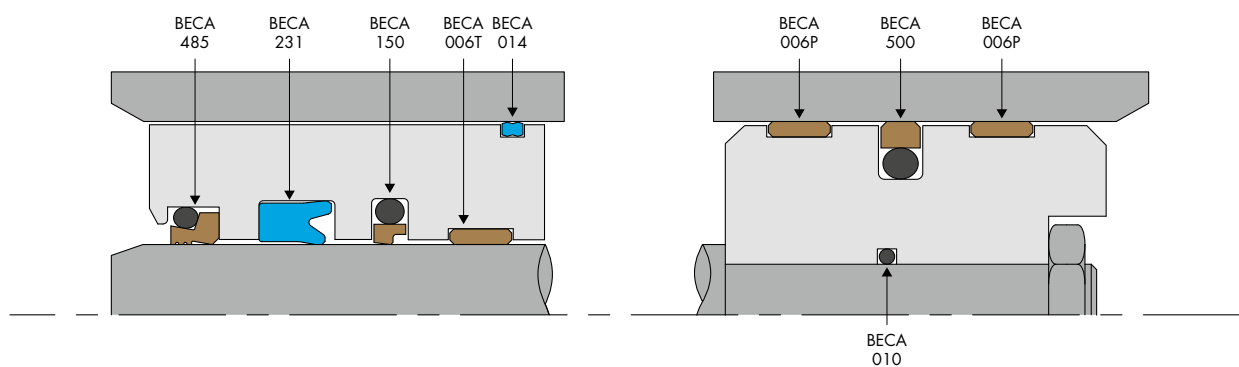




PISTON ACCUMULATORS

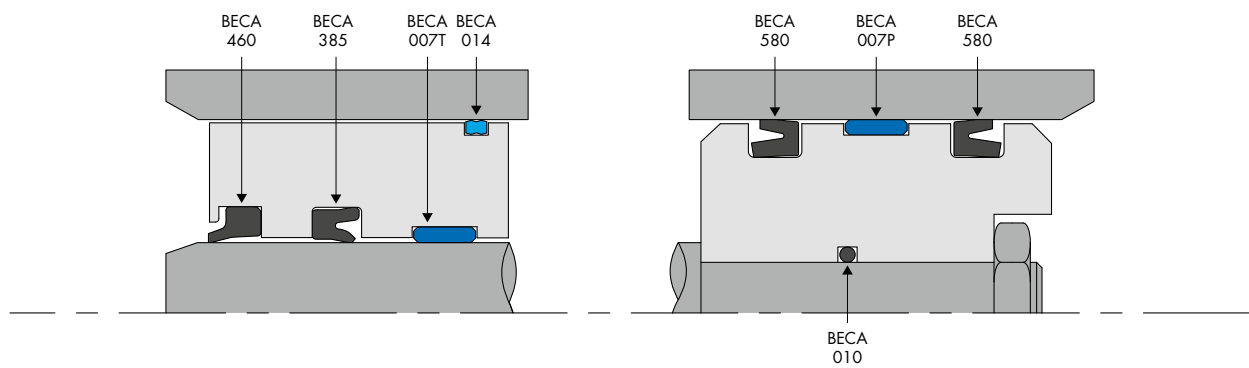
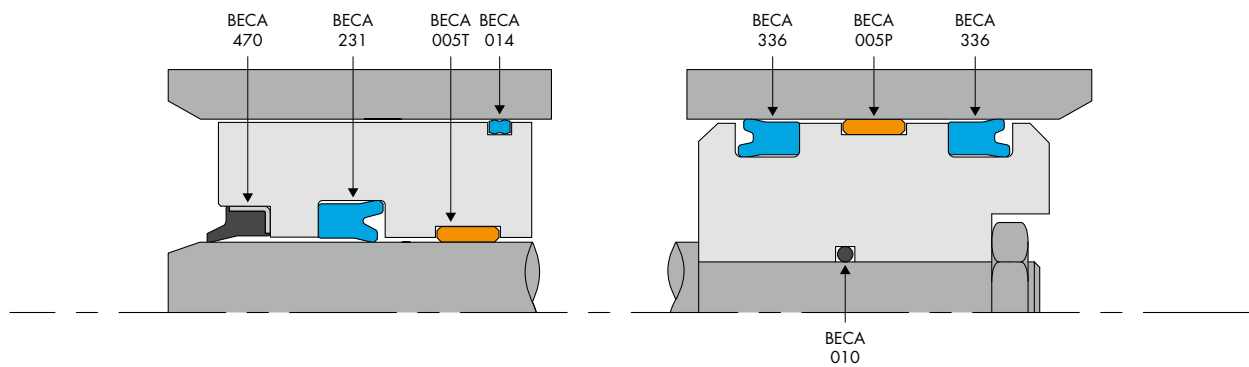
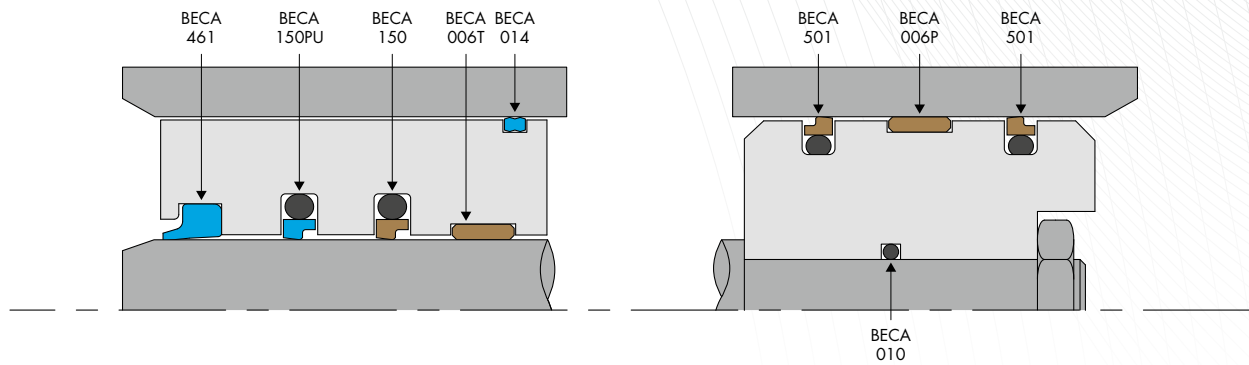


INDUSTRIAL APPLICATIONS





INDUSTRIAL APPLICATIONS (CONT.)



4. Assembly recommendations

Several essential rules must be followed before fitting the seals.

- Check that the mechanical parts (rods and bore parts) have an inlet chamfer. If not, a suitable sleeve must be used.
- Flash and chamfer or round off the sharp edges; cover the threaded parts.
- Remove the machining shavings and all impurities and other foreign bodies. Clean all mechanical parts carefully.
- Grease or oil the seal and mechanical parts to facilitate assembly. To do this, ensure beforehand that the lubricants are compatible with the seal materials. Avoid greases containing solid additives (molybdenum disulphide or zinc sulphide).
- If using installation tools, check that they are clean and do not have sharp edges.
- Soak the seal in oil heated to around +80°C / +100°C (in the water heated for the EPDM) to give the material a greater elasticity. Effective for textile fibre seals and for harder seals.
- Create assembly tools (mandrels, correction tubes, push-in tools, slide tools, plugs, etc.) using a polymer (Polyamide - PA6 or Polyoxymethylene - POM), taking into account characteristics such as sliding, and generally having excellent surface roughness so that the friction ring does not deteriorate.

Fitting methods differ depending on the type of groove (open or closed) as well as the seal's profile. The table below sets out all of the methods used to correctly fit seals from our range.

Type of seal	Piston seal	
Type of groove	Closed groove	Open groove
Composite seal	Assembly 2.A	Assembly 2.C
Lip seal	Assembly 2.B	
Compo-compact seal	-	
Compact seal	Assembly 2.B	

4.1 ASSEMBLY 2.A - PISTON COMPOSITE SEAL - CLOSED GROOVE

Applicable for the following product families: BECA 500 - 502 - 504, BECA 501 - 503 - 505, BECA 507 - 508, BECA 550 - 559, BECA 520, BECA 525, BECA 530, BECA 535, BECA 650, BECA 655.

Using assembly tools:

- Fit by expanding the O'Ring in the groove.
- Fit the expanding mandrel (see diagram 4.4-1) onto the piston.
- Fit the friction ring onto the expanding mandrel and push it into its groove using a pusher (see diagram 4.4-2).
- Calibrate the friction ring using a calibration mandrel, or using the bore if it has a chamfer between 15° and 20° over a length of 30.00 mm (see diagram below).

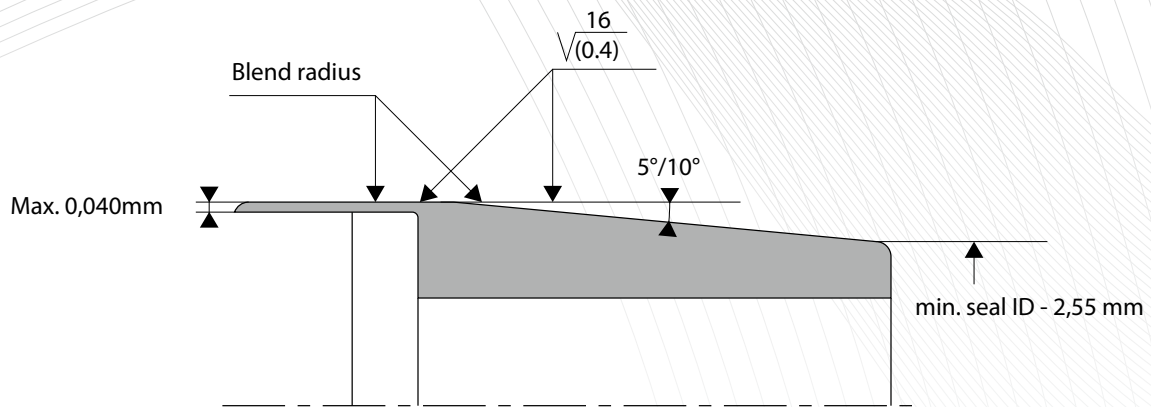


Diagram 4.4-1

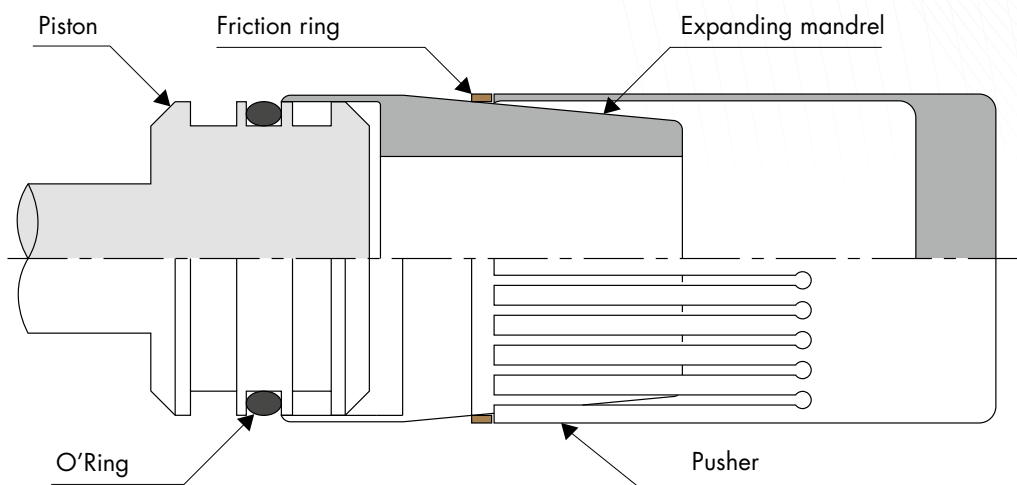


Diagram 4.4-2

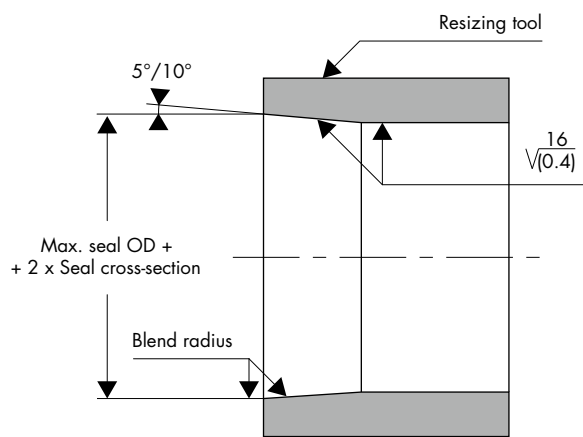


Diagram 4.4-3

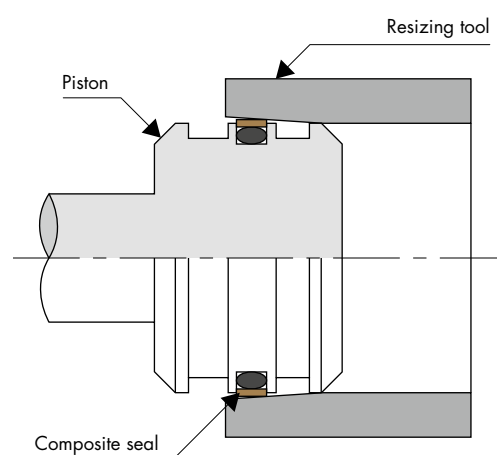


Diagram 4.4-4

If assembly tools fail:

- Fit the O'Ring by expanding it into the groove.
- Heat the friction ring to +80°C / +100°C in the oil (water for the EPDMs) to make it easier to elongate (it then returns to its original shape).
- Position the friction ring in the groove, avoiding any sharp edges.
- Calibrate the friction ring using a calibration mandrel, or using the bore if it has a chamfer between 15° and 20° over a length of 30.00 mm (see diagram 4.4-3).

4.2 ASSEMBLY 2.B - LIP SEAL, PISTON COMPACT SEAL - CLOSED GROOVE

Applicable for the following product families: BECA 336, BECA 580

Using assembly tools:

- For seals with a back-up ring or L-shaped rings, first fit the seal in the groove followed by the other parts (note 1).
- Clip one side of the piston seal into the piston groove.
- Insert a rod with a pivoting arm, which slots in at the piston rod.
- Fit the piston seal until its slots fully into place by pivoting the arm of the assembly tool (see diagram 4.5-1).



Diagram 4.5-1

If assembly tools fail:

- For seals with a back-up ring or L-shaped rings, first fit the seal in the groove followed by the other parts (note 1).
- Clip one side of the piston seal into the piston groove.
- Manually twist the piston seal by expanding it and slide it over the pre-oiled piston body until its slots fully into the groove (see diagram 4.5-2).

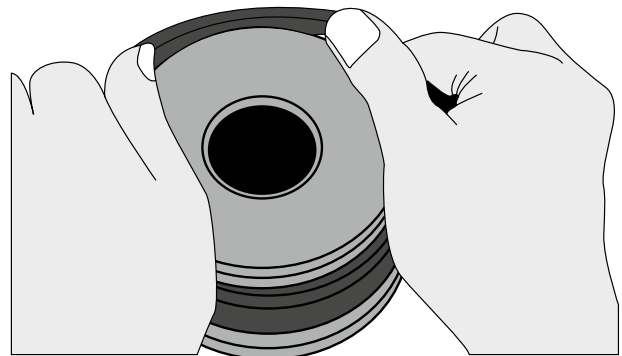


Diagram 4.5-2

Note 1: Assembly order for BECA 579
5-part seals.

- Step 1: 1st PU back-up ring
- Step 2: NBR profiled seal
- Step 3: 2nd PU back-up ring
- Step 4: 1st POM L-shaped ring
- Step 5: 2nd POM L-shaped ring

4.3 ASSEMBLY 2.C – PISTON SEAL - OPEN GROOVE

Applicable to all piston seals.

The open groove assembly is simple and does not require any specific tools.

- For composite seals, prevent the seal's parts from becoming twisted and, for the final assembly (fitting the piston into the cylinder body), use the cylinder body to calibrate the friction ring, provided the inlet chamfer is long enough. A calibration mandrel can also be used (see diagram 4.4-1).
- For lip seals and compo-compact seals, use a push-in tool to push the seal onto its groove diameter. If the chamfer does not work at the bottom of the groove, a bushing for assembly, chamfered 15° - 20° along a length of 30 mm, can be positioned against the groove diameter (see diagram 4.3-1 but reversed).

5. Storage recommendations and lifespan

Seals, which are regularly used as spare parts, can be stored over a long-term period. During storage, rubbers are subject to physical alterations, meaning that they can sometimes become unusable due to deformation, hardening, softening or cracking when they are exposed to oxygen and ozone, light, heat, moisture, oils and solvents.

ISO Standard 2230: 2002 "Rubber Products - Guidelines for Storage" sets out the storage recommendations and length of storage for rubbers depending on material classification, in order to ensure optimal preservation of the physical and chemical features of parts.

Temperature

The temperature in the storage area must preferably be between +5°C and +25°C. If the temperature exceeds +25°C, the rubber seals may undergo physical changes, no longer retaining their original technical features, and may break down prematurely. All heat sources (radiators, lamps, sunlight, etc.) must be controlled so that the temperature does not exceed +25°C.

On the other hand, if the temperature in the storage area is below +5°C, the seals may become more rigid, which will not necessarily alter their chemical and physical features. Returning them to +20°C is advised before putting them into operation.

Humidity

Generally speaking, the relative humidity of the storage area should not exceed 70% for rubber seals (65% for polyurethane seals). Avoid humid areas, as well as areas that are prone to condensation.

Light

Rubber seals must not come into contact with sunlight or artificial light with a high UV ray content. Using normal incandescent lighting is recommended, as is covering windows in the storage area with a protective red or orange paint. Using special anti-UV bags will ensure that seals are better protected.

Radiation

Precautions must be taken to protect stored parts from all sources of ionising radiation.

Ozone

As ozone is very damaging to rubber seals, the storage area must not contain ozone-producing equipment, such as mercury-vapour lamps, high-voltage electrical equipment, electric motors or other products likely to produce soundless electrical charges or sparks. No combustible gases or organic vapours must be present, as their photochemical processes may lead to ozone production.

Distortion

Seals must preferably be stored where they are not subjected to constraints, pressures or any other force that could cause them to become misshapen. Seals should be kept in their original packaging as far as possible.

Contact with liquids and semi-liquids

Seals must not be stored in contact with liquids (acids, disinfectants, oils, greases, etc.) or other semi-liquid materials, unless packaged in this way by the manufacturer.

Contact with metals

Certain metals, such as manganese, iron, copper, brass and other compounds are damaging to rubbers. Seals must not be stored in contact with such metals unless the rubber parts are affixed to them, in which case a rolled packaging would be preferable.

Contact with other materials

Rubber seals must not be stored in contact with PVC due to the risk of potentially transferring plasticiser or other ingredients. Rubbers with different compositions must be separated from one another.

Cleaning

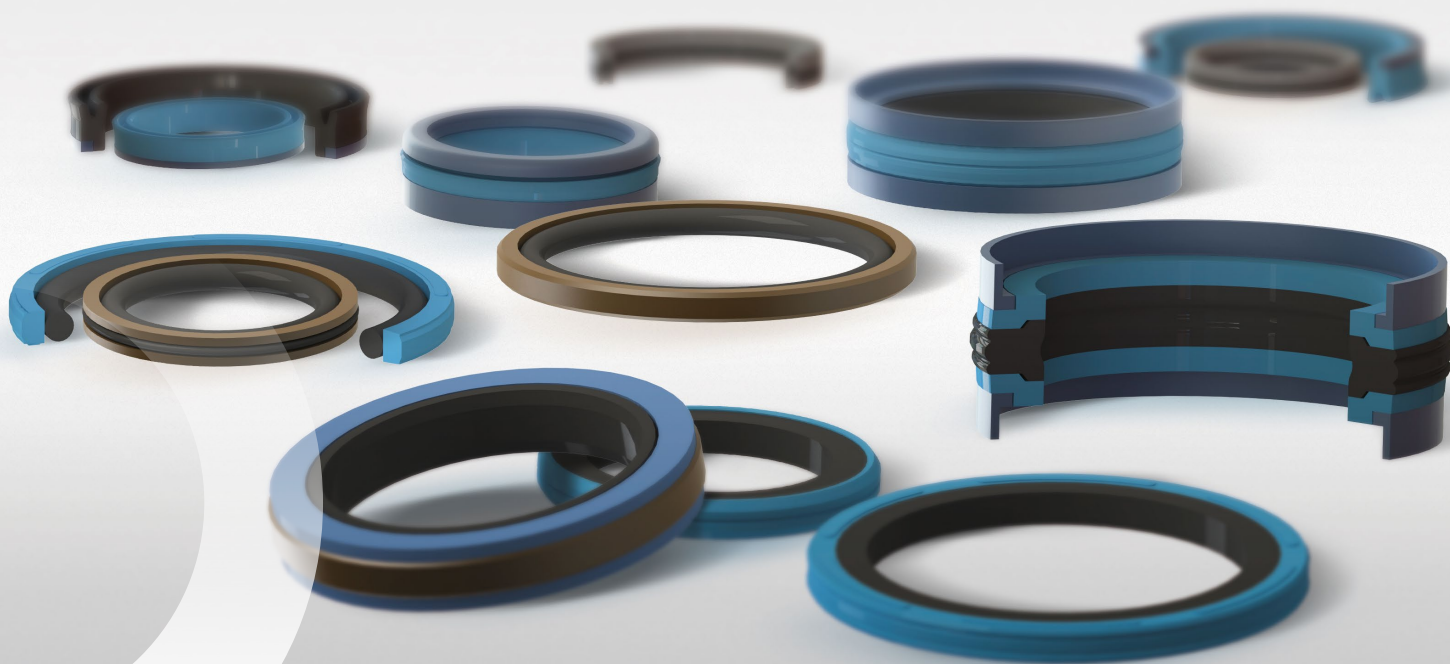
If necessary, clean seals with soap and water, or denatured alcohol. Cleaning with water should particularly be avoided for seals with textile fibre, and steel-rubber (corrosion problems) or polyurethane seals. Parts must be dried at ambient temperature and not near a heat source. Seals must not come into contact with wire brushes or sharp objects.

Storage and control

Storage duration largely depends on the type of material, rubbers being particularly sensitive to storage. The table below sets out the initial storage period.

Type of materials	Initial storage period	Extension period
NR - PU	5 years	2 years
ACM - AEM - CR - HNBR - NBR	7 years	3 years
EPDM - FFKM - FKM - FVMQ - VMQ	10 years	5 years
PTFE - PA6 - POM	Unlimited	-

Quality control is carried out at the end of this period. An extension may be possible, depending on the results.



6. Piston seals

Piston seals, which are mainly used in hydraulic cylinders, must ensure the sealing of pressurised fluids between the piston and bore.

FRANCE JOINT offers a complete range of single or double acting piston seals made from different types of materials, depending on the applications.

IMPORTANT

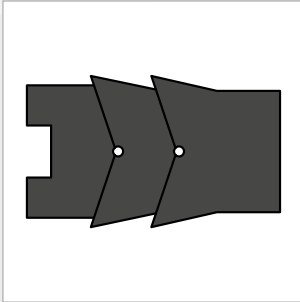
The pressures, speeds and temperatures indicate the maximum values and may not be cumulated. Moreover, they may be developed depending on the materials used.

For specific orders (temperature, pressure, speed, etc.), please contact our technical team so that they can direct you towards the appropriate choice of material and seal profile.

The dimensions shown in the catalogue are usually in stock and can be sent quickly. However, we reserve the right to modify our delivery schedule. Please contact our sales team to find out our availabilities.

Contents

	BECA 003 Materials: NBR + fabric NBR Temperature: -30°C / +110°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 24		BECA 530 Materials: PU + NBR Temperature: -30°C / +100°C Pressure: 25 MPa Speed: 0.5 m/sec	P. 62
	BECA 235P/AE Materials: Rubber + POM/PTFE Temperature: -30°C / +200°C Pressure: 25 MPa Speed: 0.5 m/sec	P. 103		BECA 535 Materials: PU + NBR Temperature: -30°C / +100°C Pressure: 25 MPa Speed: 0.5 m/sec	P. 66
	BECA 335P/AE Materials: PU + POM Temperature: -30°C / +110°C Pressure: 45 MPa Speed: 0.5 m/sec	P. 104		BECA 540 - 549 Materials: PTFE + Stainless steel Temperature: -200°C / +260°C Pressure: 30 MPa Speed: 15 m/s	P. 70
	BECA 336 Materials: PU Temperature: -30°C / +110°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 26		BECA 550 - 559 Materials: PTFE + Rubber Temperature: -30°C / +200°C Pressure: 35 MPa Speed: 5 m/s	P. 74
	BECA 336/AE Materials: PU + POM Temperature: -30°C / +110°C Pressure: 50 MPa Speed: 0.5 m/sec	P. 105		BECA 560 Materials: NBR + POM Temperature: -30°C / +100°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 78
	BECA 500 - 502 - 504 Materials: PTFE + Rubber Temperature: -30°C / +200°C Pressure: 50 MPa Speed: 5 m/s	P. 30		BECA 570 Materials: Fabric NBR + POM Temperature: -30°C / +100°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 80
	BECA 501 - 503 - 505 Materials: PTFE + Rubber Temperature: -30°C / +200°C Pressure: 50 MPa Speed: 5 m/s	P. 36		BECA 571 Materials: Rubber + POM/PTFE Temperature: -30°C / +100°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 82
	BECA 507 - 508 Materials: PTFE + Rubber Temperature: -30°C / +200°C Pressure: 50 MPa Speed: 2 m/s	P. 42		BECA 572 Materials: PU + POM + POM Temperature: -30°C / +110°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 84
	BECA 510 Materials: PU + NBR + POM Temperature: -30°C / +100°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 46		BECA 579 Materials: NBR + PU + POM Temperature: -30°C / +100°C Pressure: 50 MPa Speed: 0.5 m/sec	P. 86
	BECA 512 Materials: PTFE + NBR + POM Temperature: -30°C / +100°C Pressure: 50 MPa Speed: 1.5 m/s	P. 48		BECA 579S Materials: NBR + PU + POM Temperature: -30°C / +100°C Pressure: 50 MPa Speed: 0.5 m/sec	P. 88
	BECA 513 Materials: PU + NBR + POM Temperature: -30°C / +100°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 50		BECA 580 - 581 Materials: Rubber Temperature: -30°C / +200°C Pressure: 8 MPa Speed: 0.5 m/sec	P. 92
	BECA 519 Materials: PU + NBR Temperature: -30°C / +100°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 52		BECA 650 Materials: PA6 + NBR Temperature: -30°C / +100°C Pressure: 40 MPa Speed: 0.5 m/sec	P. 96
	BECA 520 - 522 - 524 Materials: PU + NBR Temperature: -30°C / +100°C Pressure: 25 MPa Speed: 0.5 m/sec	P. 54		BECA 655 Materials: PA6 + NBR Temperature: -30°C / +100°C Pressure: 50 MPa Speed: 0.5 m/sec	P. 100
	BECA 525 Materials: PU + NBR Temperature: -30°C / +100°C Pressure: 25 MPa Speed: 0.5 m/sec	P. 58			



PISTON SEALS

BECA 003



DESCRIPTION

The BECA 003 profile is a 3-part chevron seal in which the central part, which is made of textile-reinforced NBR, is encapsulated between a POM head nut and a TPE locking ring.

ADVANTAGES

Strong sealing, tolerant to defects in the surface condition (impacts on the rod, carbon deposits, etc.)

The tightness can be adjusted depending on the application

Excellent resistance to pressure

APPLICATIONS

Cylinders for extreme demands

Presses

Steel industry

Mining machines

Installations in corrosive and abrasive environments

MATERIALS

POM + fabric NBR + TPE

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

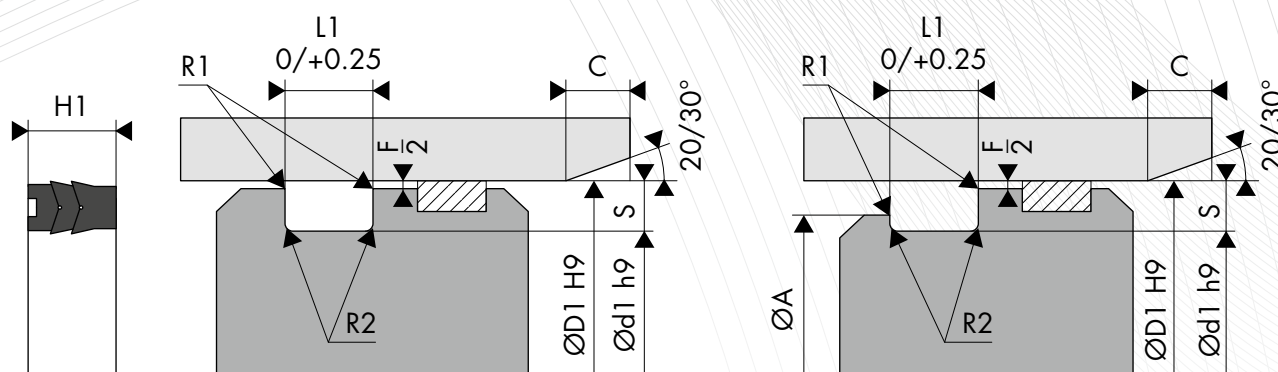
Radial section S	Radial gap F/2			
	16 MPa	26 MPa	32 MPa	40 MPa
≤ 5.00	0.50	0.40	0.35	-
≤ 7.50	0.55	0.45	0.40	0.35
≤ 12.50	0.60	0.50	0.45	0.40
≤ 15.00	0.65	0.55	0.45	0.40

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Bore diameter ØD1	Radius R1	Radius R2	Chamfer C
≤ 100.00	0.30	0.40	2.50
> 100.00	0.30	0.80	4.00

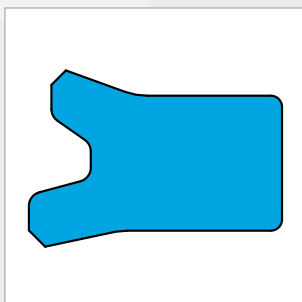


DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.25
003.302009	20.00	10.00	9.30
003.302209	22.00	12.00	9.30
003.302509	25.00	15.00	9.30
003.302809	28.00	18.00	9.30
003.303009	30.00	20.00	9.30
003.303210	32.00	20.00	10.90
003.303510	35.00	23.00	10.90
003.303610	36.00	24.00	10.90
003.304011	40.00	25.00	11.50
003.304211	42.00	27.00	11.50
003.304511	45.00	30.00	11.50
003.305011	50.00	35.00	11.50
003.305511	55.00	40.00	11.50
003.305611	56.00	41.00	11.50
003.306011	60.00	45.00	11.50
003.306313	63.00	48.00	13.00
003.307015	70.00	50.00	15.20
003.308015	80.00	60.00	15.20
003.39021	90.00	70.00	21.20
003.310021	100.00	80.00	21.20
003.311021	110.00	90.00	21.20
003.311521	115.00	95.00	21.20
003.312525	125.00	100.00	25.80
003.314025	140.00	115.00	25.80
003.315029	150.00	120.00	29.00

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.25
003.315534	155.00	125.00	34.00
003.316029	160.00	130.00	29.00
003.318031	180.00	150.00	31.50
003.319532	195.00	165.00	32.50
003.320033	200.00	170.00	33.50
003.321033	210.00	180.00	33.50
003.322033	220.00	190.00	33.50
003.322533	225.00	195.00	33.50
003.323033	230.00	200.00	33.50
003.324033	240.00	215.00	33.50
003.325033	250.00	220.00	33.50
003.327033	270.00	240.00	33.50
003.327533	275.00	245.00	33.50
003.328033	280.00	250.00	33.50
003.330033	300.00	270.00	33.50
003.331033	310.00	280.00	33.50
003.332033	320.00	290.00	33.50
003.333032	330.00	300.00	32.00
003.334032	340.00	300.00	32.00
003.336033	360.00	320.00	33.50
003.338042	380.00	340.00	42.50
003.340040	400.00	360.00	40.00
003.342040	420.00	380.00	40.00
003.345041	450.00	410.00	41.50
003.346040	460.00	420.00	40.00

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 336



DESCRIPTION

The BECA 336 profile is a U-ring type single acting piston seal with offset polyurethane lips.

ADVANTAGES

Optimised sealing effect at both high and low pressures

Excellent abrasion and wear resistance

Assembly by deformation in closed groove

APPLICATIONS

Mobile hydraulics

Injection presses

Machine tools

Presses

Hydraulic cylinders

MATERIALS

Profiled seal

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

Other grades of materials are available. Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

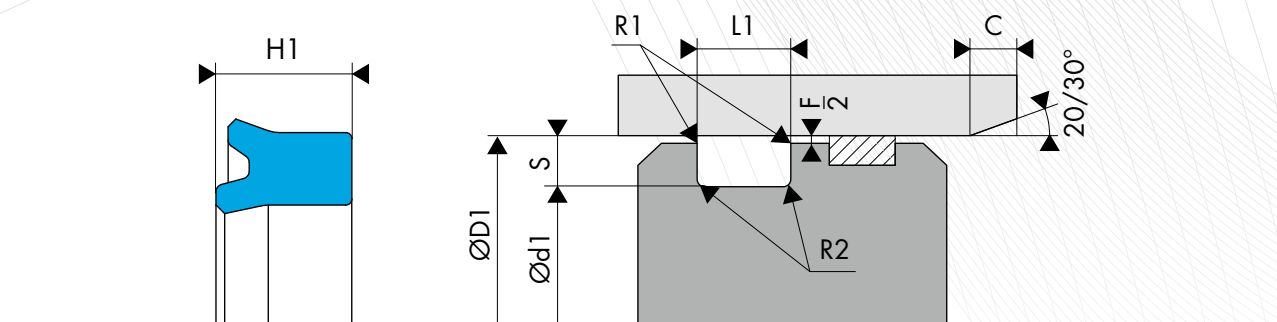
Bore diameter ØD1	Radial extrusion gap F/2				
	≤ 5 MPa	≤ 10 MPa	≤ 20 MPa	≤ 30 MPa	≤ 40 MPa
≤ 60 mm	0.40	0.30	0.20	0.15	0.10
> 60 mm	0.50	0.40	0.30	0.20	0.15

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.00	0.20	0.40	2.00
4.00	0.20	0.40	2.50
5.00	0.40	0.60	3.00
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00



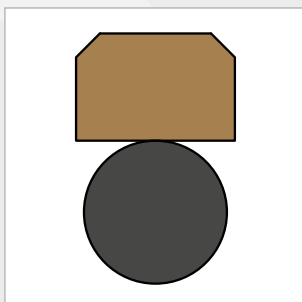
DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.5
336.0060294	6.00	2.90	4.00	4.50
336.0120055	12.00	5.00	5.50	6.00
336.0140094	14.00	9.00	4.00	5.00
336.0150103	15.00	10.00	3.00	4.00
336.0160104	16.00	10.00	3.80	4.20
336.0100186	18.00	10.00	6.00	7.00
336.0220144	22.00	14.00	4.00	4.50
336.2251456	22.50	14.50	6.00	7.00
336.0230174	23.00	17.00	4.00	4.50
336.0240148	24.00	14.00	8.00	9.00
336.0240166	24.00	16.00	6.00	7.00
336.0250155	25.00	15.00	5.80	6.30
336.0250158	25.00	15.00	8.00	9.00
336.0250174	25.00	17.00	4.00	4.50
336.0250176	25.00	17.00	5.70	6.30
336.0260185	26.00	18.00	5.50	6.50
336.0280186	28.00	18.00	6.30	7.00
336.0300206	30.00	20.00	6.00	7.00
336.0300208	30.00	20.00	8.00	9.00
336.0300226	30.00	22.00	6.40	7.00
336.3012066	30.16	20.63	6.35	7.35
336.3220663	32.00	20.63	6.35	7.35
336.0320228	32.00	22.00	8.00	9.00
336.0320244	32.00	24.00	4.00	4.50
336.0340248	34.00	24.00	8.50	9.50
336.0350258	35.00	25.00	8.00	9.00
336.0350274	35.00	27.00	4.00	4.50
336.0350278	35.00	27.00	8.00	9.00
336.0380251	38.00	25.00	10.00	11.00
336.0380308	38.00	30.00	8.00	9.00
336.3083896	38.90	30.80	6.00	7.00
336.0390316	39.00	31.00	6.10	6.30
336.0400308	40.00	30.00	7.30	8.00
336.0400301	40.00	30.00	10.00	11.00
336.0400327	40.00	32.00	6.50	7.20
336.0400328	40.00	32.00	8.00	9.00
336.0400338	40.00	33.00	8.00	9.00
336.0410301	41.00	30.00	10.00	11.00
336.0430308	43.00	30.00	8.00	9.00
336.0330406	44.00	33.00	6.00	7.00
336.0440341	44.00	34.00	10.00	11.00
336.0445267	44.50	26.50	7.70	8.20
336.0450309	45.00	30.00	9.00	10.00

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.5
336.0450301	45.00	30.00	10.00	11.00
336.0450358	45.00	35.00	7.50	8.00
336.0460341	46.00	34.00	10.50	12.00
336.0315483	48.00	31.50	12.50	13.50
336.0500351	50.00	35.00	10.00	11.00
336.0500405	50.00	40.00	5.00	6.00
336.0400505	50.00	40.00	5.70	6.30
336.0500406	50.00	40.00	6.30	7.00
336.0500407	50.00	40.00	7.00	8.00
336.0500401	50.00	40.00	10.00	11.00
336.0420506	50.00	42.00	6.00	7.00
336.5084087	50.80	40.80	7.00	8.00
336.5084127	50.80	41.27	6.35	6.80
336.0520421	52.00	42.00	10.00	11.00
336.0450356	53.00	45.00	6.70	7.70
336.0550352	55.00	35.00	12.00	13.00
336.0550456	55.00	45.00	6.00	7.00
336.0550451	55.00	45.00	10.00	11.00
336.0600506	60.00	50.00	6.00	7.00
336.0600507	60.00	50.00	7.20	8.00
336.0600501	60.00	50.00	10.00	11.00
336.0520626	62.00	52.00	6.00	7.00
336.0630489	63.00	48.00	9.00	10.00
336.0500637	63.00	50.00	7.00	8.00
336.0630537	63.00	53.00	7.00	8.00
336.0630532	63.00	53.00	12.00	13.00
336.0630555	63.00	55.00	5.70	6.00
336.0630576	63.00	57.00	5.00	6.00
336.6475206	64.77	52.07	6.93	7.93
336.0650452	65.00	45.00	12.00	13.00
336.0650453	65.00	45.00	13.70	14.50
336.0650528	65.00	52.00	8.50	9.50
336.0526510	65.00	52.20	10.00	11.00
336.0650553	65.00	55.00	13.50	14.50
336.6507528	65.07	52.37	8.70	9.50
336.0550709	70.00	55.00	9.00	10.00
336.0700606	70.00	60.00	6.00	7.00
336.0700607	70.00	60.00	7.00	8.00
336.0700602	70.00	60.00	12.00	13.00
336.0730571	73.00	57.00	10.00	11.00
336.0550752	75.00	55.00	12.00	13.00
336.0750601	75.00	60.00	9.00	10.00
336.0760681	76.00	68.00	10.00	11.00
336.0580800	80.00	58.00	10.00	11.00
336.0800604	80.00	60.00	13.50	14.50
336.0800650	80.00	65.00	10.00	11.00
336.6080070	80.00	70.00	6.00	7.00
336.0800706	80.00	70.00	6.80	7.50
336.0800707	80.00	70.00	7.20	7.50
336.0800701	80.00	70.00	9.00	10.00
336.0800702	80.00	70.00	12.00	13.00
336.0720801	80.00	71.80	10.00	11.00
336.8286342	82.80	63.40	11.60	12.60
336.0700859	85.00	70.00	9.00	10.00
336.0900702	90.00	70.00	12.00	13.00
336.0900752	90.00	75.00	12.00	13.00
336.0980842	98.00	84.00	12.00	13.00
336.1000804	100.00	80.00	13.50	14.50
336.1000852	100.00	85.00	12.00	13.00
336.1000906	100.00	90.00	6.70	7.70
336.0821012	101.00	82.00	12.00	13.00
336.1010862	101.00	86.00	12.00	13.00
336.1016794	101.60	79.38	12.70	13.70

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.5
336.1100952	110.00	95.00	12.00	13.00
336.1201002	120.00	100.00	12.00	13.00
336.1201005	120.00	100.00	15.00	16.00
336.1200894	120.65	88.90	14.30	15.30
336.1201016	120.65	101.60	16.00	17.50
336.1251055	125.00	105.00	15.00	16.00
336.1251155	125.00	115.00	14.00	15.00
336.1301156	130.00	115.00	15.00	16.00
336.1351253	135.00	125.00	13.50	14.50
336.1501301	150.00	130.00	15.00	16.00
336.1501405	150.00	140.00	14.00	15.00
336.1521409	152.00	140.00	8.00	9.00
336.1551401	155.00	140.00	10.00	11.00
336.1601355	160.00	135.00	15.50	16.50
336.1601405	160.00	140.00	15.00	16.00
336.1751632	175.00	163.00	12.00	13.00
336.1801668	180.00	166.00	8.00	9.00
336.1831653	185.00	165.00	13.00	14.00
336.2001805	200.00	180.00	15.00	16.00
336.2001888	200.00	187.82	8.30	9.30
336.1962256	225.00	196.00	26.00	27.00
336.2302165	230.00	216.00	15.00	16.00
336.2402109	240.00	210.00	18.00	19.00
336.2802602	280.00	260.00	12.00	13.00

The figures highlighted in bold correspond to the dimensions for standard ISO 5597, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA

500-502-504



DESCRIPTION

The BECA 500 - 502 - 504 profiles are double acting composite piston seals composed of a filled PTFE friction ring and pre-tightened rubber O'Ring. They can be assembled in grooves according to standard ISO 7425/1. Option of connecting the seal to 1 or 2 back-up rings.

ADVANTAGES

Optimal sealing in static and dynamic applications

Low friction coefficient;
no stick-slip effect

Excellent abrasion and extrusion resistance

Wide temperature range and excellent chemical resistance, depending on the material selected for the O'Ring

APPLICATIONS

Mobile hydraulics

Injection presses

Machine tools

Presses

Standard cylinders

MATERIALS

Friction ring

Bronze-filled PTFE

Carbon-filled PTFE

Blue GL PTFE

O'Ring

NBR 70 Shore A

FKM 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	50 MPa
Speed	5 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2		
	10 MPa	20 MPa	40 MPa
2.45	0.30	0.20	0.15
3.75	0.40	0.25	0.15
5.50	0.40	0.25	0.20
7.75	0.50	0.30	0.20
10.50	0.60	0.35	0.25
12.25	0.60	0.35	0.25
14.00	0.70	0.50	0.30
19.00	1.00	0.70	0.60

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

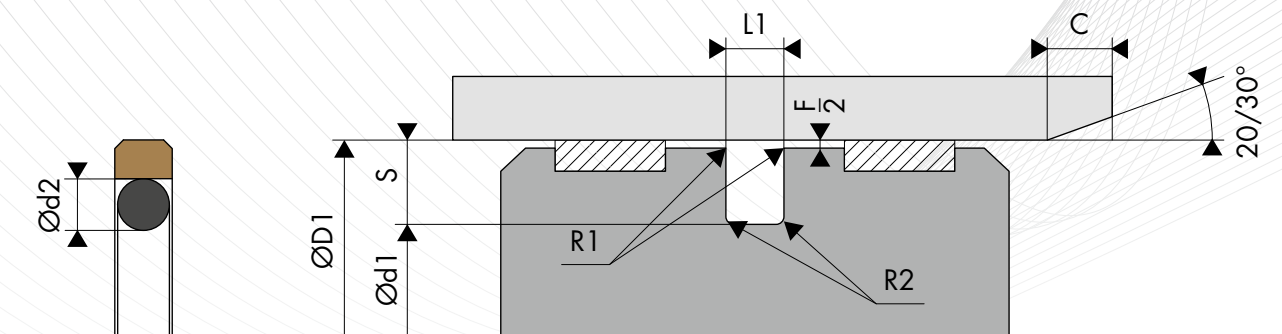
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
2.45	0.30	0.40	3.00
3.75	0.30	0.60	3.00
5.50	0.30	1.00	3.00
7.75	0.30	1.30	5.00
10.50	0.30	1.80	6.00
12.25	0.30	1.80	8.00
14.00	0.30	2.50	10.00
19.00	0.30	3.00	12.00

TABLE MATERIALS

Friction ring					O'Ring			Mating surface material
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature	
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
					G6	FKM 70 Shore A	-20°C/+200°C	
					C6	EPDM 70 Shore A	-45°C/+150°C	
					F6	VMQ 70 Shore A	-60°C/+200°C	
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
					C6	EPDM 70 Shore A	-45°C/+150°C	
CG	C	PTFE + 23% Carbon + 2% Graphite	Black		K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
					C6	EPDM 70 Shore A	-45°C/+150°C	
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C	
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey		K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
					G6	FKM 70 Shore A	-20°C/+200°C	
					C6	EPDM 70 Shore A	-45°C/+150°C	
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
K2	K	PTFE + 20% Ekonol	Light brown		C6	EPDM 70 Shore A	-45°C/+150°C	
					K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
					C6	EPDM 70 Shore A	-45°C/+150°C	
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C	
B4	B	PTFE + 40% Bronze	Dark brown		K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
PU	U	Polyurethane	Blue	Strong mechanical resistance Good resistance to wear and abrasion High elasticity modulus	K6	NBR 70 Shore A	-30°C/+90°C	
PUHT	U	High-temperature polyurethane	White or off-white	Good flexibility Very good resistance to ozone and oxidation	K6	NBR 70 Shore A	-30°C/+100°C	

Other grades of materials are available depending on your specificities.



○ INSTALLATION DIMENSIONS

Bore diameter ØD1 H9			Groove diameter	Groove width	Radial section	O'Ring cross-section
BECA 500 Standard range	BECA 502 Light range	BECA 504 Heavy-duty range	Ød1 h9	L1 0/+0.20	S	Ød2
8.0 - 14.9	15.0 - 39.9	---	D1 - 4.90	2.20	2.45	1.78
15.0 - 39.9	40.0 - 79.9	---	D1 - 7.50	3.20	3.75	2.62
40.0 - 79.9	80.0 - 132.9	15.0 - 39.9	D1 - 11.00	4.20	5.50	3.53
80.0 - 132.9	133.0 - 329.9	40.0 - 79.9	D1 - 15.50	6.30	7.75	5.33
133.0 - 329.9	330.0 - 669.9	80.0 - 132.9	D1 - 21.00	8.10	10.50	6.99
330.0 - 669.9	670.0 - 999.9	133.0 - 329.9	D1 - 24.50	8.10	12.25	6.99
670.0 - 999.9	1000.0 - **	330.0 - 669.9	D1 - 28.00	9.50	14.00	8.40
1000.0 - **	---	1000.0 - **	D1 - 38.00	13.80	19.00	12.00

For special applications > 40 MPa, we recommend using an H8/f8 tolerance (bore/piston) or selecting other, more suitable materials. Please contact our experts.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Friction ring, PTFE + 60% Bronze - Code DB
 _____ : NBR 70 Shore A O'Ring - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 39.00 mm
Part number _____ : 500. 050DBK6

Part number -

	500.	050	DB	K6
Family				
Bore diameter				
Friction ring material*				
O'Ring material*				

* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
500.008	8.00	3.10	2.20
500.010	10.00	5.10	2.20
500.012	12.00	7.10	2.20
500.014	14.00	9.10	2.20
504.015	15.00	4.00	4.20
500.015	15.00	7.50	3.20
502.015	15.00	10.10	2.20
504.016	16.00	5.00	4.20
500.016	16.00	8.50	3.20
502.016	16.00	11.10	2.20
504.018	18.00	7.00	4.20
500.018	18.00	10.50	3.20
502.018	18.00	13.10	2.20
504.020	20.00	9.00	4.20
500.020	20.00	12.50	3.20
502.020	20.00	15.10	2.20
504.021	21.00	10.00	4.20
500.021	21.00	13.50	3.20
502.021	21.00	16.10	2.20
504.022	22.00	11.00	4.20
500.022	22.00	14.50	3.20
502.022	22.00	17.10	2.20
504.024	24.00	13.00	4.20
500.024	24.00	16.50	3.20
502.024	24.00	19.10	2.20
504.025	25.00	14.00	4.20
500.025	25.00	17.50	3.20
502.025	25.00	20.10	2.20
504.028	28.00	17.00	4.20
500.028	28.00	20.50	3.20
502.028	28.00	23.10	2.20
504.030	30.00	19.00	4.20
500.030	30.00	22.50	3.20
502.030	30.00	25.10	2.20
504.032	32.00	21.00	4.20
500.032	32.00	24.50	3.20
502.032	32.00	27.10	2.20
504.035	35.00	24.00	4.20
500.035	35.00	27.50	3.20
502.035	35.00	30.10	2.20
504.036	36.00	25.00	4.20
500.036	36.00	28.50	3.20
502.036	36.00	31.10	2.20
504.038	38.00	27.00	4.20
500.038	38.00	30.50	3.20
502.038	38.00	33.10	2.20
504.040	40.00	24.50	6.30
500.040	40.00	29.00	4.20
502.040	40.00	32.50	3.20
504.042	42.00	26.50	6.30
500.042	42.00	31.00	4.20
502.042	42.00	34.50	3.20
504.045	45.00	29.50	6.30
500.045	45.00	34.00	4.20
502.045	45.00	37.50	3.20
504.048	48.00	32.50	6.30
500.048	48.00	37.00	4.20
502.048	48.00	40.50	3.20
504.050	50.00	34.50	6.30
500.050	50.00	39.00	4.20
502.050	50.00	42.50	3.20
504.052	52.00	36.50	6.30

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
500.052	52.00	41.00	4.20
502.052	52.00	44.50	3.20
504.053	53.00	37.50	6.30
500.053	53.00	42.00	4.20
502.053	53.00	45.50	3.20
504.055	55.00	39.50	6.30
500.055	55.00	44.00	4.20
502.055	55.00	47.50	3.20
504.057	57.00	41.50	6.30
500.057	57.00	46.00	4.20
502.057	57.00	49.50	3.20
504.058	58.00	42.50	6.30
500.058	58.00	47.00	4.20
502.058	58.00	50.50	3.20
504.060	60.00	44.50	6.30
500.060	60.00	49.00	4.20
502.060	60.00	52.50	3.20
504.062	62.00	46.50	6.30
500.062	62.00	51.00	4.20
502.062	62.00	54.50	3.20
504.063	63.00	47.50	6.30
500.063	63.00	52.00	4.20
502.063	63.00	55.50	3.20
504.065	65.00	49.50	6.30
500.065	65.00	54.00	4.20
502.065	65.00	57.50	3.20
504.068	68.00	52.50	6.30
500.068	68.00	57.00	4.20
502.068	68.00	60.50	3.20
504.070	70.00	54.50	6.30
500.070	70.00	59.00	4.20
502.070	70.00	62.50	3.20
504.072	72.00	56.50	6.30
500.072	72.00	61.00	4.20
502.072	72.00	64.50	3.20
504.075	75.00	59.50	6.30
500.075	75.00	64.00	4.20
502.075	75.00	67.50	3.20
504.080	80.00	59.00	8.10
500.080	80.00	64.50	6.30
502.080	80.00	69.00	4.20
504.082	82.00	61.00	8.10
500.082	82.00	66.50	6.30
502.082	82.00	71.00	4.20
504.085	85.00	64.00	8.10
500.085	85.00	69.50	6.30
502.085	85.00	74.00	4.20
504.087	87.00	66.00	8.10
500.087	87.00	71.50	6.30
502.087	87.00	76.00	4.20
504.090	90.00	69.00	8.10
500.090	90.00	74.50	6.30
502.090	90.00	79.00	4.20
504.092	92.00	71.00	8.10
500.092	92.00	76.50	6.30
502.092	92.00	81.00	4.20
504.095	95.00	74.00	8.10
500.095	95.00	79.50	6.30
502.095	95.00	84.00	4.20
504.100	100.00	79.00	8.10
500.100	100.00	84.50	6.30
502.100	100.00	89.00	4.20

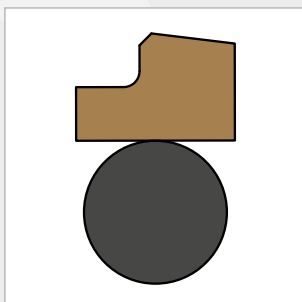
Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
504.105	105.00	84.00	8.10
500.105	105.00	89.50	6.30
502.105	105.00	94.00	4.20
504.108	108.00	87.00	8.10
500.108	108.00	92.50	6.30
502.108	108.00	97.00	4.20
504.110	110.00	89.00	8.10
500.110	110.00	94.50	6.30
502.110	110.00	99.00	4.20
504.115	115.00	94.00	8.10
500.115	115.00	99.50	6.30
502.115	115.00	104.00	4.20
504.120	120.00	99.00	8.10
500.120	120.00	104.50	6.30
502.120	120.00	109.00	4.20
504.125	125.00	104.00	8.10
500.125	125.00	109.50	6.30
502.125	125.00	114.00	4.20
504.127	127.00	106.00	8.10
500.127	127.00	111.50	6.30
502.127	127.00	116.00	4.20
504.130	130.00	109.00	8.10
500.130	130.00	114.50	6.30
502.130	130.00	119.00	4.20
504.132	132.00	111.00	8.10
500.132	132.00	116.50	6.30
502.132	132.00	121.00	4.20
504.135	135.00	110.50	8.10
500.135	135.00	114.00	8.10
502.135	135.00	119.50	6.30
504.140	140.00	115.50	8.10
500.140	140.00	119.00	8.10
502.140	140.00	124.50	6.30
504.145	145.00	120.50	8.10
500.145	145.00	124.00	8.10
502.145	145.00	129.50	6.30
504.150	150.00	125.50	8.10
500.150	150.00	129.00	8.10
502.150	150.00	134.50	6.30
504.155	155.00	130.50	8.10
500.155	155.00	134.00	8.10
502.155	155.00	139.50	6.30
504.160	160.00	135.50	8.10
500.160	160.00	139.00	8.10
502.160	160.00	144.50	6.30
504.165	165.00	140.50	8.10
500.165	165.00	144.00	8.10
502.165	165.00	149.50	6.30
504.170	170.00	145.50	8.10
500.170	170.00	149.00	8.10
502.170	170.00	154.50	6.30
504.175	175.00	150.50	8.10
500.175	175.00	154.00	8.10
502.175	175.00	159.50	6.30
504.180	180.00	155.50	8.10
500.180	180.00	159.00	8.10
502.180	180.00	164.50	6.30
504.185	185.00	160.50	8.10
500.185	185.00	164.00	8.10
502.185	185.00	169.50	6.30
504.190	190.00	165.50	8.10
500.190	190.00	169.00	8.10

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
502.190	190.00	174.50	6.30
504.195	195.00	170.50	8.10
500.195	195.00	174.00	8.10
502.195	195.00	179.50	6.30
504.200	200.00	175.50	8.10
500.200	200.00	179.00	8.10
502.200	200.00	184.50	6.30
504.205	205.00	180.50	8.10
500.205	205.00	184.00	8.10
502.205	205.00	189.50	6.30
504.210	210.00	185.50	8.10
500.210	210.00	189.00	8.10
502.210	210.00	194.50	6.30
504.215	215.00	190.50	8.10
500.215	215.00	194.00	8.10
502.215	215.00	199.50	6.30
504.220	220.00	195.50	8.10
500.220	220.00	199.00	8.10
502.220	220.00	204.50	6.30
504.230	230.00	205.50	8.10
500.230	230.00	209.00	8.10
502.230	230.00	214.50	6.30
504.240	240.00	215.50	8.10
500.240	240.00	219.00	8.10
502.240	240.00	224.50	6.30
504.250	250.00	225.50	8.10
500.250	250.00	229.00	8.10
502.250	250.00	234.50	6.30
504.260	260.00	235.50	8.10
500.260	260.00	239.00	8.10
502.260	260.00	244.50	6.30
504.270	270.00	245.50	8.10
500.270	270.00	249.00	8.10
502.270	270.00	254.50	6.30
504.280	280.00	255.50	8.10
500.280	280.00	259.00	8.10
502.280	280.00	264.50	6.30
504.290	290.00	265.50	8.10
500.290	290.00	269.00	8.10
502.290	290.00	274.50	6.30
504.300	300.00	275.50	8.10
500.300	300.00	279.00	8.10
502.300	300.00	284.50	6.30
504.310	310.00	285.50	8.10
500.310	310.00	289.00	8.10
502.310	310.00	294.50	6.30
504.320	320.00	295.50	8.10
500.320	320.00	299.00	8.10
502.320	320.00	304.50	6.30
504.330	330.00	302.00	9.50
500.330	330.00	305.50	8.10
502.330	330.00	309.00	8.10
504.340	340.00	312.00	9.50
500.340	340.00	315.50	8.10
502.340	340.00	319.00	8.10
504.350	350.00	322.00	9.50
500.350	350.00	325.50	8.10
502.350	350.00	329.00	8.10
504.360	360.00	332.00	9.50
500.360	360.00	335.50	8.10
502.360	360.00	339.00	8.10
504.370	370.00	342.00	9.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
500.370	370.00	345.50	8.10
502.370	370.00	349.00	8.10
504.380	380.00	352.00	9.50
500.380	380.00	355.50	8.10
502.380	380.00	359.00	8.10
504.390	390.00	362.00	9.50
500.390	390.00	365.50	8.10
502.390	390.00	369.00	8.10
504.400	400.00	372.00	9.50
500.400	400.00	375.50	8.10
502.400	400.00	379.00	8.10
504.410	410.00	382.00	9.50
500.410	410.00	385.50	8.10
502.410	410.00	389.00	8.10
504.420	420.00	392.00	9.50
500.420	420.00	395.50	8.10
502.420	420.00	399.00	8.10
504.430	430.00	402.00	9.50
500.430	430.00	405.50	8.10
502.430	430.00	409.00	8.10
504.440	440.00	412.00	9.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
500.440	440.00	415.50	8.10
502.440	440.00	419.00	8.10
504.450	450.00	422.00	9.50
500.450	450.00	425.50	8.10
502.450	450.00	429.00	8.10
504.460	460.00	432.00	9.50
500.460	460.00	435.50	8.10
502.460	460.00	439.00	8.10
504.470	470.00	442.00	9.50
500.470	470.00	445.50	8.10
502.470	470.00	449.00	8.10
504.480	480.00	452.00	9.50
500.480	480.00	455.50	8.10
502.480	480.00	459.00	8.10
504.490	490.00	462.00	9.50
500.490	490.00	465.50	8.10
502.490	490.00	469.00	8.10
504.500	500.00	472.00	9.50
500.500	500.00	475.50	8.10
502.500	500.00	479.00	8.10

The figures highlighted in bold correspond to the dimensions for standard ISO 7425/1, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA

501-503-505



DESCRIPTION

The BECA 501 - 503 - 505 profiles are single acting composite piston seals composed of a filled PTFE friction ring and pre-tightened rubber O'Ring. Option of connecting the seal to a back-up ring.

ADVANTAGES

Optimal sealing in static and dynamic applications

Low friction coefficient;
no stick-slip effect

Excellent abrasion and extrusion resistance

Wide temperature range and excellent chemical resistance, depending on the material selected for the O'Ring

APPLICATIONS

Mobile hydraulics
Injection presses
Machine tools
Presses
Standard cylinders

MATERIALS

Friction ring

Bronze-filled PTFE
Carbon-filled PTFE
Blue GL PTFE

O'Ring

NBR 70 Shore A
FKM 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	50 MPa
Speed	5 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2		
	10 MPa	20 MPa	40 MPa
2.45	0.30	0.20	0.15
3.65	0.40	0.25	0.15
5.35	0.50	0.30	0.20
7.55	0.70	0.40	0.25
10.25	0.80	0.60	0.35
12.00	0.90	0.70	0.40
13.65	1.00	0.80	0.50
19.00	1.20	0.90	0.60

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

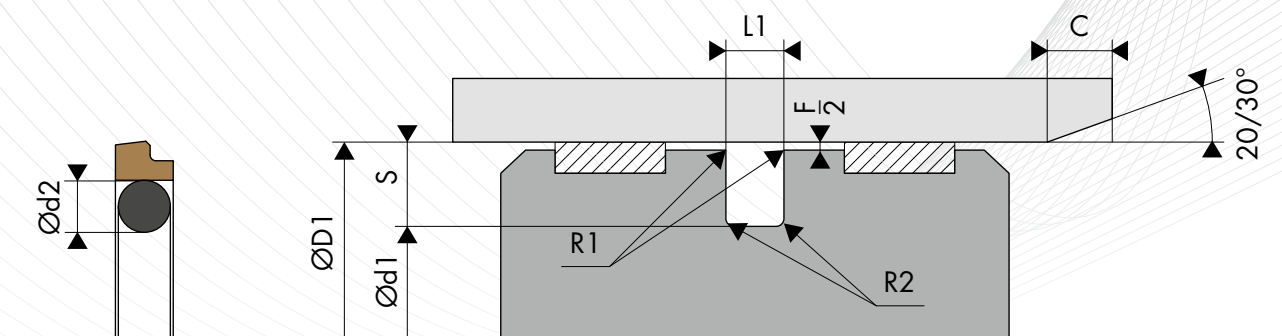
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
2.45	0.30	0.40	3.00
3.65	0.30	0.60	3.00
5.35	0.30	1.00	3.00
7.55	0.30	1.30	5.00
10.25	0.30	1.80	6.00
12.00	0.30	1.80	8.00
13.65	0.30	2.50	10.00
19.00	0.30	3.00	12.00

TABLE MATERIALS

Friction ring					O'Ring			Mating surface material
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature	
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
					G6	FKM 70 Shore A	-20°C/+200°C	
					C6	EPDM 70 Shore A	-45°C/+150°C	
					F6	VMQ 70 Shore A	-60°C/+200°C	
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
CG	C	PTFE + 23% Carbon + 2% Graphite	Black		C6	EPDM 70 Shore A	-45°C/+150°C	
					K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
					C6	EPDM 70 Shore A	-45°C/+150°C	
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C	
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey		K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
					G6	FKM 70 Shore A	-20°C/+200°C	
					C6	EPDM 70 Shore A	-45°C/+150°C	
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
K2	K	PTFE + 20% Ekonol	Light brown		C6	EPDM 70 Shore A	-45°C/+150°C	
					K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
					C6	EPDM 70 Shore A	-45°C/+150°C	
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C	
B4	B	PTFE + 40% Bronze	Dark brown		K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
PU	U	Polyurethane	Blue	Strong mechanical resistance Good resistance to wear and abrasion High elasticity modulus	K6	NBR 70 Shore A	-30°C/+90°C	
PUHT	U	High-temperature polyurethane	White or off-white	Good flexibility Very good resistance to ozone and oxidation	K6	NBR 70 Shore A	-30°C/+100°C	

Other grades of materials are available depending on your specificities.



○ INSTALLATION DIMENSIONS

Bore diameter ØD1 H9			Groove diameter	Groove width	Radial section	O'Ring cross-section
BECA 501 Standard range	BECA 503 Light range	BECA 505 Heavy-duty range	Ød1 h9	L1 0/+0.20	S	Ød2
8.0 - 14.9	15.0 - 39.9	---	D1 - 4.90	2.20	2.45	1.78
15.0 - 39.9	40.0 - 79.9	---	D1 - 7.30	3.20	3.65	2.62
40.0 - 79.9	80.0 - 132.9	15.0 - 39.9	D1 - 10.70	4.20	5.35	3.53
80.0 - 132.9	133.0 - 329.9	40.0 - 79.9	D1 - 15.10	6.30	7.55	5.33
133.0 - 329.9	330.0 - 669.9	80.0 - 132.9	D1 - 20.50	8.10	10.25	6.99
330.0 - 669.9	670.0 - 999.9	133.0 - 329.9	D1 - 24.00	8.10	12.00	6.99
670.0 - 999.9	1000.0 - **	330.0 - 669.9	D1 - 27.30	9.50	13.65	8.40
1000.0 - **	---	1000.0 - **	D1 - 38.00	13.80	19.00	12.00

For special applications > 40 MPa, we recommend using an H8/f8 tolerance (bore/piston) or selecting other, more suitable materials. Please contact our experts.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Friction ring, PTFE + 60% Bronze - Code DB
 _____ : NBR 70 Shore A O'Ring - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 39.30 mm
Part number _____ : 501. 050DBK6

Part number -

	501.	050	DB	K6
Family				
Bore diameter				
Friction ring material*				
O'Ring material*				

* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
501.008	8.00	3.10	2.20
501.009	9.00	4.10	2.20
501.010	10.00	5.10	2.20
501.012	12.00	7.10	2.20
501.014	14.00	9.10	2.20
503.015	15.00	10.10	2.20
503.016	16.00	11.10	2.20
505.018	18.00	7.30	4.20
501.018	18.00	10.70	3.20
503.018	18.00	13.10	2.20
505.020	20.00	9.30	4.20
501.020	20.00	12.70	3.20
503.020	20.00	15.10	2.20
505.022	22.00	11.30	4.20
501.022	22.00	14.70	3.20
503.022	22.00	17.10	2.20
505.025	25.00	14.30	4.20
501.025	25.00	17.70	3.20
503.025	25.00	20.10	2.20
505.028	28.00	17.30	4.20
501.028	28.00	20.70	3.20
505.030	30.00	19.30	4.20
501.030	30.00	22.70	3.20
505.032	32.00	21.30	4.20
501.032	32.00	24.70	3.20
505.035	35.00	24.30	4.20
501.035	35.00	27.70	3.20
505.038	38.00	27.30	4.20
501.038	38.00	30.70	3.20
505.040	40.00	24.90	6.30
501.040	40.00	29.30	4.20
503.040	40.00	32.70	3.20
505.042	42.00	26.90	6.30
501.042	42.00	31.30	4.20
503.042	42.00	34.70	3.20
505.045	45.00	29.90	6.30
501.045	45.00	34.30	4.20
503.045	45.00	37.70	3.20
505.048	48.00	32.90	6.30
501.048	48.00	37.30	4.20
503.048	48.00	40.70	3.20
505.050	50.00	34.90	6.30
501.050	50.00	39.30	4.20
503.050	50.00	42.70	3.20
505.052	52.00	36.90	6.30
501.052	52.00	41.30	4.20
503.052	52.00	44.70	3.20
505.055	55.00	39.90	6.30
501.055	55.00	44.30	4.20

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
503.055	55.00	47.70	3.20
505.058	58.00	42.90	6.30
501.058	58.00	47.30	4.20
503.058	58.00	50.70	3.20
505.060	60.00	44.90	6.30
503.060	60.00	49.30	4.20
505.062	62.00	46.90	6.30
503.062	62.00	51.30	4.20
505.063	63.00	47.90	6.30
503.063	63.00	52.30	4.20
505.065	65.00	49.90	6.30
503.065	65.00	54.30	4.20
505.070	70.00	54.90	6.30
503.070	70.00	59.30	4.20
505.072	72.00	56.90	6.30
503.072	72.00	61.30	4.20
505.075	75.00	59.90	6.30
503.075	75.00	64.30	4.20
505.078	78.00	62.90	6.30
503.078	78.00	67.30	4.20
505.080	80.00	59.50	8.10
501.080	80.00	64.90	6.30
503.080	80.00	69.30	4.20
505.082	82.00	61.50	8.10
501.082	82.00	66.90	6.30
503.082	82.00	71.30	4.20
505.085	85.00	64.50	8.10
501.085	85.00	69.90	6.30
503.085	85.00	74.30	4.20
505.090	90.00	69.50	8.10
501.090	90.00	74.90	6.30
503.090	90.00	79.30	4.20
505.095	95.00	74.50	8.10
501.095	95.00	79.90	6.30
503.095	95.00	84.30	4.20
505.100	100.00	79.50	8.10
501.100	100.00	84.90	6.30
503.100	100.00	89.30	4.20
505.105	105.00	84.50	8.10
501.105	105.00	89.90	6.30
503.105	105.00	94.30	4.20
505.110	110.00	89.50	8.10
501.110	110.00	94.90	6.30
503.110	110.00	99.30	4.20
505.115	115.00	94.50	8.10
501.115	115.00	99.90	6.30
503.115	115.00	104.30	4.20
505.120	120.00	99.50	8.10
501.120	120.00	104.90	6.30

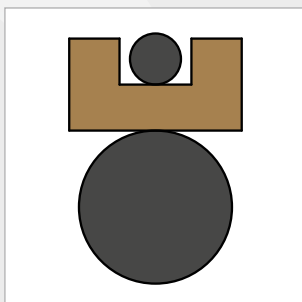
Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
503.120	120.00	109.30	4.20
505.125	125.00	104.50	8.10
501.125	125.00	109.90	6.30
503.125	125.00	114.30	4.20
505.130	130.00	109.50	8.10
501.130	130.00	114.90	6.30
503.130	130.00	119.30	4.20
501.135	135.00	114.50	8.10
503.135	135.00	119.90	6.30
501.140	140.00	119.50	8.10
503.140	140.00	124.90	6.30
501.145	145.00	124.50	8.10
503.145	145.00	129.90	6.30
501.150	150.00	129.50	8.10
503.150	150.00	134.90	6.30
501.155	155.00	134.50	8.10
503.155	155.00	139.90	6.30
501.160	160.00	139.50	8.10
503.160	160.00	144.90	6.30
501.165	165.00	144.50	8.10
503.165	165.00	149.90	6.30
501.170	170.00	149.50	8.10
503.170	170.00	154.90	6.30
501.175	175.00	154.50	8.10
503.175	175.00	159.90	6.30
501.180	180.00	159.50	8.10
503.180	180.00	164.90	6.30
501.190	190.00	169.50	8.10
503.190	190.00	174.90	6.30
505.200	200.00	176.00	8.10
501.200	200.00	179.50	8.10
503.200	200.00	184.90	6.30
505.210	210.00	186.00	8.10
501.210	210.00	189.50	8.10
503.210	210.00	194.90	6.30
505.220	220.00	196.00	8.10
501.220	220.00	199.50	8.10
503.220	220.00	204.90	6.30
505.230	230.00	206.00	8.10
501.230	230.00	209.50	8.10
503.230	230.00	214.90	6.30
505.240	240.00	216.00	8.10
501.240	240.00	219.50	8.10
503.240	240.00	224.90	6.30
505.250	250.00	226.00	8.10
501.250	250.00	229.50	8.10
503.250	250.00	234.90	6.30
505.260	260.00	236.00	8.10
501.260	260.00	239.50	8.10

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
505.270	270.00	246.00	8.10
501.270	270.00	249.50	8.10
505.280	280.00	256.00	8.10
501.280	280.00	259.50	8.10
505.290	290.00	266.00	8.10
501.290	290.00	269.50	8.10
505.300	300.00	276.00	8.10
501.300	300.00	279.50	8.10
505.310	310.00	286.00	8.10
501.310	310.00	289.50	8.10
505.320	320.00	296.00	8.10
501.320	320.00	299.50	8.10
505.330	330.00	302.70	9.50
501.330	330.00	306.00	8.10
503.330	330.00	309.50	8.10
505.340	340.00	312.70	9.50
501.340	340.00	316.00	8.10
503.340	340.00	319.50	8.10
505.350	350.00	322.70	9.50
501.350	350.00	326.00	8.10
503.350	350.00	329.50	8.10
505.360	360.00	332.70	9.50
501.360	360.00	336.00	8.10
503.360	360.00	339.50	8.10
505.370	370.00	342.70	9.50
501.370	370.00	346.00	8.10
503.370	370.00	349.50	8.10
505.380	380.00	352.70	9.50
501.380	380.00	356.00	8.10
503.380	380.00	359.50	8.10
505.390	390.00	362.70	9.50
501.390	390.00	366.00	8.10
503.390	390.00	369.50	8.10
505.400	400.00	372.70	9.50
501.400	400.00	376.00	8.10
503.400	400.00	379.50	8.10
505.410	410.00	382.70	9.50
501.410	410.00	386.00	8.10
503.410	410.00	389.50	8.10
505.420	420.00	392.70	9.50
501.420	420.00	396.00	8.10
503.420	420.00	399.50	8.10
505.430	430.00	402.70	9.50
501.430	430.00	406.00	8.10
503.430	430.00	409.50	8.10
505.440	440.00	412.70	9.50
501.440	440.00	416.00	8.10
503.440	440.00	419.50	8.10
505.450	450.00	422.70	9.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
501.450	450.00	426.00	8.10
503.450	450.00	429.50	8.10
505.460	460.00	432.70	9.50
501.460	460.00	436.00	8.10
503.460	460.00	439.50	8.10
505.470	470.00	442.70	9.50
501.470	470.00	446.00	8.10
503.470	470.00	449.50	8.10
505.480	480.00	452.70	9.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
501.480	480.00	456.00	8.10
503.480	480.00	459.50	8.10
505.490	490.00	462.70	9.50
501.490	490.00	466.00	8.10
503.490	490.00	469.50	8.10
505.500	500.00	472.70	9.50
501.500	500.00	476.00	8.10
503.500	500.00	479.50	8.10

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA

507-508



DESCRIPTION

The BECA 507-508 profiles are double acting composite piston seals composed of a filled PTFE friction ring, static O'Ring and dynamic rubber O'Ring. They can be assembled in grooves according to standard ISO 7425/1. Option of connecting the seal to 1 or 2 back-up rings.

ADVANTAGES

Optimal sealing for separating two fluids
Low friction coefficient;
no stick-slip effect
Excellent abrasion resistance
Wide temperature range and excellent chemical resistance, depending on the material selected for the O'Rings

APPLICATIONS

Mobile hydraulics
Machine tools
Presses
Hydro-pneumatic suspension systems

MATERIALS

Friction ring

Bronze-filled PTFE
Carbon-filled PTFE
Blue GL PTFE

O'Rings

NBR 70 Shore A
FKM 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	50 MPa
Speed	2 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2		
	10 MPa	20 MPa	40 MPa
5.50	0.25	0.15	0.10
7.75	0.30	0.20	0.15
10.50	0.30	0.20	0.15
12.25	0.30	0.20	0.15
14.00	0.45	0.30	0.25
17.50	0.55	0.40	0.35

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

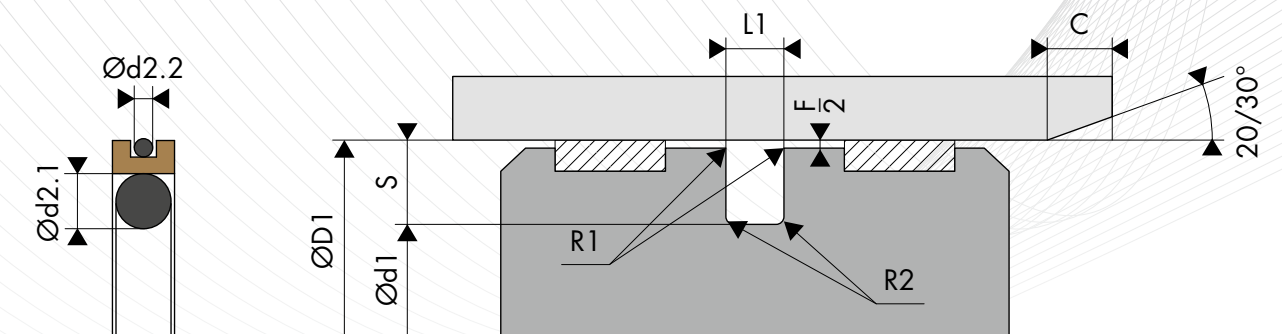
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
5.50	0.30	1.00	3.00
7.75	0.30	1.30	3.00
10.50	0.30	1.80	5.00
12.25	0.30	1.80	6.00
14.00	0.30	2.50	8.00
17.50	0.30	3.00	10.00

TABLE MATERIALS

Friction ring					O'Rings			Mating surface material
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature	
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
					G6	FKM 70 Shore A	-20°C/+200°C	
					C6	EPDM 70 Shore A	-45°C/+150°C	
					F6	VMQ 70 Shore A	-60°C/+200°C	
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
					C6	EPDM 70 Shore A	-45°C/+150°C	
CG	C	PTFE + 23% Carbon + 2% Graphite	Black		K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
					C6	EPDM 70 Shore A	-45°C/+150°C	
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C	
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey		K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
					G6	FKM 70 Shore A	-20°C/+200°C	
					C6	EPDM 70 Shore A	-45°C/+150°C	
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
					C6	EPDM 70 Shore A	-45°C/+150°C	
K2	K	PTFE + 20% Ekonol	Light brown		K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	
					C6	EPDM 70 Shore A	-45°C/+150°C	
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C	
B4	B	PTFE + 40% Bronze	Dark brown		K6	NBR 70 Shore A	-30°C/+100°C	
					G6	FKM 70 Shore A	-20°C/+200°C	

Other grades of materials are available depending on your specificities.



INSTALLATION DIMENSIONS

Bore diameter ØD1 H9		Groove diameter	Groove width	Radial section	O'Ring cross-section	O'Ring / X'Ring cross-section
BECA 507 Standard range	BECA 508 Light range	Ød1 h9	L1 0/+0.20	S	Ød2.1	Ød2.2
15.0 - 39.9	40.0 - 79.9	D1 - 11.00	4.20	5.50	3.53	1.78
40.0 - 79.9	80.0 - 132.9	D1 - 15.50	6.30	7.75	3.53	1.78
80.0 - 132.9	133.0 - 252.9	D1 - 21.00	8.10	10.50	6.99	2.62
133.0 - 252.9	---	D1 - 24.50	8.10	12.25	6.99	2.62
253.0 - 462.9	---	D1 - 28.00	9.50	14.00	8.40	3.53
463.0 - 700.0	---	D1 - 35.00	11.50	17.50	10.00	3.53

For special applications > 40 MPa, we recommend using an H8/f8 tolerance (bore/piston) or selecting other, more suitable materials. Please contact our experts.

EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Friction ring, PTFE + 60% Bronze - Code DB
 _____ : NBR 70 Shore A O'Rings - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 34.50 mm
Part number _____ : 507. 050DBK6

Part number -

	507.	050	DB	K6
Family				
Bore diameter				
Friction ring material*				
O'Ring materials*				

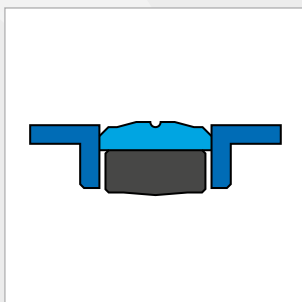
* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.2
507.015	15.00	4.00	4.20
507.016	16.00	5.00	4.20
507.018	18.00	7.00	4.20
507.020	20.00	9.00	4.20
507.022	22.00	11.00	4.20
507.025	25.00	14.00	4.20
507.028	28.00	17.00	4.20
507.030	30.00	19.00	4.20
507.032	32.00	21.00	4.20
507.035	35.00	24.00	4.20
507.038	38.00	22.50	6.30
507.040	40.00	24.50	6.30
508.040	40.00	29.00	4.20
507.042	42.00	26.50	6.30
508.042	42.00	31.00	4.20
507.045	45.00	29.50	6.30
508.045	45.00	34.00	4.20
507.048	48.00	32.50	6.30
508.048	48.00	37.00	4.20
507.050	50.00	34.50	6.30
508.050	50.00	39.00	4.20
507.052	52.00	36.50	6.30
508.052	52.00	41.00	4.20
507.055	55.00	39.50	6.30
508.055	55.00	44.00	4.20
507.058	58.00	42.50	6.30
508.058	58.00	47.00	4.20
507.060	60.00	44.50	6.30
508.060	60.00	49.00	4.20
507.062	62.00	46.50	6.30
508.062	62.00	51.00	4.20
507.063	63.00	47.50	6.30
508.063	63.00	52.00	4.20
507.065	65.00	49.50	6.30
508.065	65.00	54.00	4.20
507.070	70.00	54.50	6.30
508.070	70.00	59.00	4.20
507.072	72.00	56.50	6.30
508.072	72.00	61.00	4.20
507.075	75.00	59.50	6.30
508.075	75.00	64.00	4.20
507.078	78.00	62.50	6.30
508.078	78.00	67.00	4.20
507.080	80.00	59.00	8.10
508.080	80.00	64.50	6.30
507.082	82.00	61.00	8.10
508.082	82.00	66.50	6.30
507.085	85.00	64.00	8.10
508.085	85.00	69.50	6.30
507.090	90.00	69.00	8.10
508.090	90.00	74.50	6.30
507.095	95.00	74.00	8.10
508.095	95.00	79.50	6.30
507.100	100.00	79.00	8.10
508.100	100.00	84.50	6.30
507.105	105.00	84.00	8.10
508.105	105.00	89.50	6.30
507.110	110.00	89.00	8.10
508.110	110.00	94.50	6.30
507.115	115.00	94.00	8.10
508.115	115.00	99.50	6.30
507.120	120.00	99.00	8.10
508.120	120.00	104.50	6.30
507.125	125.00	104.00	8.10

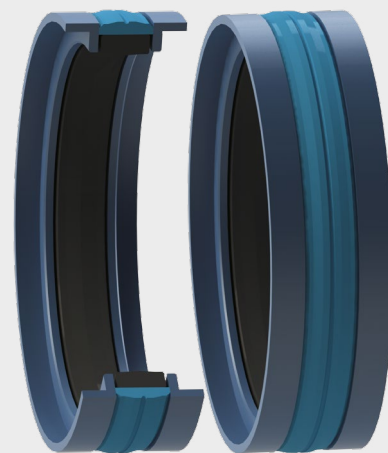
Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.2
508.125	125.00	109.50	6.30
507.130	130.00	109.00	8.10
508.130	130.00	114.50	6.30
507.135	135.00	110.50	8.10
508.135	135.00	114.00	8.10
507.140	140.00	115.50	8.10
508.140	140.00	119.00	8.10
507.145	145.00	120.50	8.10
508.145	145.00	124.00	8.10
507.150	150.00	125.50	8.10
508.150	150.00	129.00	8.10
507.155	155.00	130.50	8.10
508.155	155.00	134.00	8.10
507.160	160.00	135.50	8.10
508.160	160.00	139.00	8.10
507.165	165.00	140.50	8.10
508.165	165.00	144.00	8.10
507.170	170.00	145.50	8.10
508.170	170.00	149.00	8.10
507.175	175.00	150.50	8.10
508.175	175.00	154.00	8.10
507.180	180.00	155.50	8.10
508.180	180.00	159.00	8.10
507.190	190.00	165.50	8.10
508.190	190.00	169.00	8.10
507.200	200.00	175.50	8.10
508.200	200.00	179.00	8.10
507.210	210.00	185.50	8.10
508.210	210.00	189.00	8.10
507.220	220.00	195.50	8.10
508.220	220.00	199.00	8.10
507.230	230.00	205.50	8.10
508.230	230.00	209.00	8.10
507.240	240.00	215.50	8.10
508.240	240.00	219.00	8.10
507.250	250.00	225.50	8.10
508.250	250.00	229.00	8.10
507.260	260.00	232.00	9.50
507.270	270.00	242.00	9.50
507.280	280.00	252.00	9.50
507.290	290.00	262.00	9.50
507.300	300.00	272.00	9.50
507.310	310.00	282.00	9.50
507.320	320.00	292.00	9.50
507.330	330.00	302.00	9.50
507.340	340.00	312.00	9.50
507.350	350.00	322.00	9.50
507.360	360.00	332.00	9.50
507.370	370.00	342.00	9.50
507.380	380.00	352.00	9.50
507.390	390.00	362.00	9.50
507.400	400.00	372.00	9.50
507.410	410.00	382.00	9.50
507.420	420.00	392.00	9.50
507.430	430.00	402.00	9.50
507.440	440.00	412.00	9.50
507.450	450.00	422.00	9.50
507.460	460.00	432.00	9.50
507.470	470.00	435.00	11.50
507.480	480.00	445.00	11.50
507.490	490.00	455.00	11.50
507.500	500.00	465.00	11.50

The figures highlighted in bold correspond to the dimensions for standard ISO 7425/1, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 510



DESCRIPTION

The BECA 510 profile is a high-performing, double acting compact piston seal composed of two POM wear/back-up rings, a polyurethane friction ring for dynamic applications and a flexible pre-tightened NBR ring. It can be assembled in a groove according to standard ISO 6547.

ADVANTAGES

Excellent wear resistance
Very low compression set
Closed groove assembly

APPLICATIONS

Construction equipment
Lifting equipment
Hydraulic cylinders

MATERIALS

Profiled seal

NBR 80 Shore A

Friction ring

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

Wear/back-up rings

Polyoxymethylene - POM

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

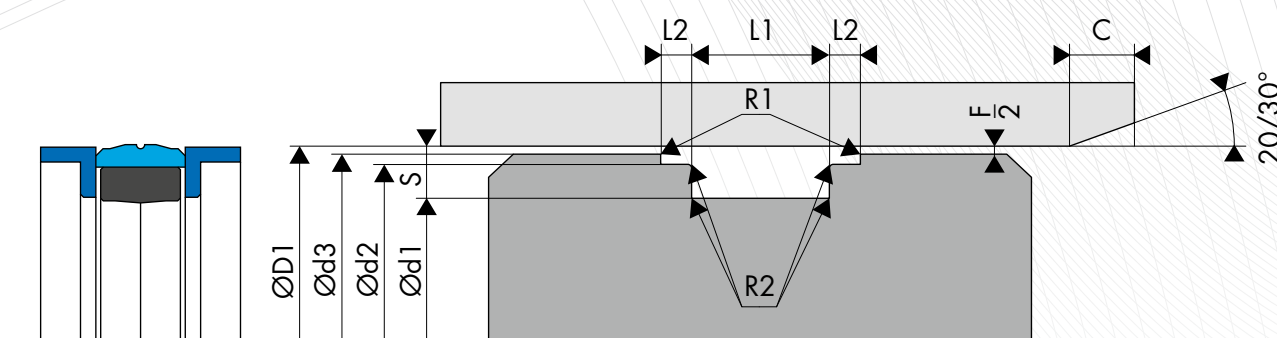
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

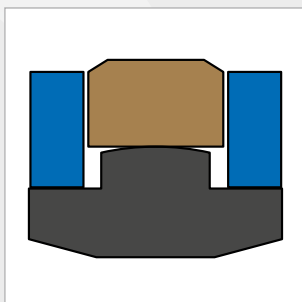
Radial section S	Radius R1	Radius R2	Chamfer C
4.00	0.40	0.40	2.50
5.00	0.40	0.40	3.00
7.50	0.40	0.40	4.50
10.00	0.80	0.80	5.50
15.00	0.80	0.80	8.00



DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter			Groove width	
		Ød1 h9	Ød2 h9	Ød3 h11	L1 0/+0.4	L2 0/+0.15
510.3025AP9	25.00	405.74	0/+0.10	24.00	10.00	4.00
510.3032AP9	32.00	24.00	29.00	31.00	10.00	4.00
510.3040AP9	40.00	32.00	37.00	39.00	10.00	4.00
510.3050AP9	50.00	40.00	47.00	49.00	12.50	4.00
510.3063AP9	63.00	53.00	60.00	62.00	12.50	4.00
510.3080AP9	80.00	65.00	76.00	78.50	20.00	5.00
510.3100AP9	100.00	85.00	96.00	98.50	20.00	5.00
510.3125AP9	125.00	105.00	120.00	123.00	25.00	6.30
510.3140AP9	140.00	120.00	135.00	138.00	25.00	6.30
510.3160AP9	160.00	140.00	155.00	158.00	25.00	6.30
510.3180AP9	180.00	150.00	172.00	178.00	36.00	12.50
510.3200AP9	200.00	170.00	192.00	197.00	36.00	12.50
510.3250AP9	250.00	220.00	242.00	247.00	36.00	12.50
510.3320AP9	320.00	290.00	312.00	317.00	36.00	12.50
510.3400AP9	400.00	360.00	392.00	397.00	50.00	16.00
510.3500AP9	500.00	460.00	492.00	497.00	50.00	16.00

The figures highlighted in bold correspond to the dimensions for standard ISO 6547, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 512



DESCRIPTION

The BECA 512 profile is a high-performing, double acting compact piston seal composed of a dynamic bronze-filled PTFE friction ring, flexible pre-tightened NBR ring and two POM back-up rings.

ADVANTAGES

Low friction coefficient;
no stick-slip effect
Increase in possible extrusion gaps
Excellent extrusion resistance even during pressure peaks
Excellent abrasion resistance
Assembled by deformation

APPLICATIONS

Mobile hydraulics
Hydraulic cylinders

MATERIALS

Profiled seal

NBR 80 Shore A
FKM 80 Shore A

Friction ring

Bronze-filled PTFE

Back-up rings

Polyoxymethylene - POM

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +115°C depending on the material selected
Pressure	50 MPa
Speed	1.5 m/s
Media	Mineral hydraulic oils Glycol/oil emulsions Water/oil

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Pressure MPa	Radial gap F/2
10 MPa	0.50
25 MPa	0.50
35 MPa	0.40
40 MPa	0.30
50 MPa	0.30

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

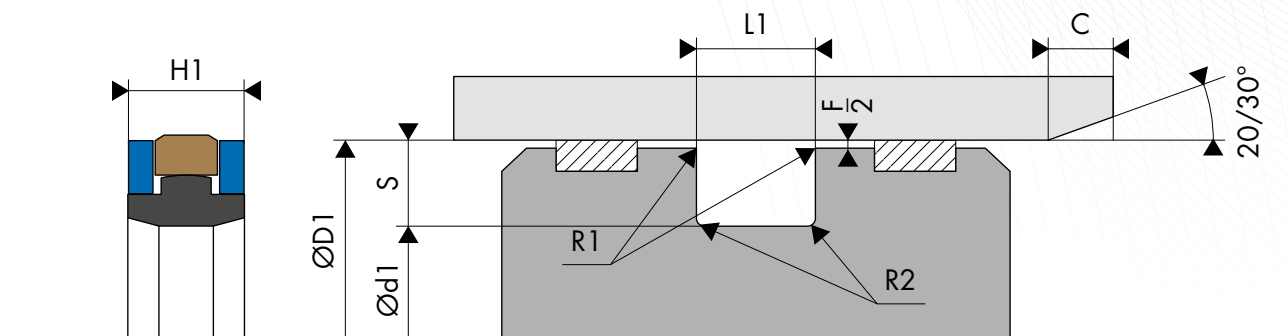
Radial section S	Radius R1	Radius R2	Chamfer C
5.00	0.20	0.70	2.50
7.50	0.20	1.20	5.00
11.50	0.20	1.80	8.00
14.00	0.20	2.50	10.00

TABLE MATERIALS

Friction ring			Flexible ring			Mating surface material
Standard code	Type of material	Colour	Code	Type of material	Service temperature	
DB	PTFE + 60% Bronze	Dark brown	K8	NBR 80 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron
			G8	FKM 80 Shore A	-20°C / +115°C*	

Other grades of materials are available depending on your specificities.

* Temperature limited due to the combination of polyoxymethylene (POM) back-up rings



EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Friction ring, PTFE + 60% Bronze - Code DB
 _____ : NBR 80 Shore A profiled seal - Code K8
 _____ : Polyoxymethylene (POM) back-up ring - Code HC
 Bore diameter _____ : ØD1 = 50.00 mm
 Groove diameter _____ : Ød1 + 36.00 mm
 Part number _____ : 512.050DBK8

Part number -

512.	050	DB	K8
Family			
Bore diameter			
Friction ring material*			
Profiled seal material*			

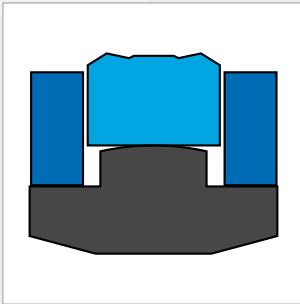
* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.20
512.040	40.00	30.00	8.50	9.00
512.045	45.00	35.00	8.50	9.00
512.050	50.00	36.00	8.50	9.00
512.S55	55.00	41.00	8.50	9.00
512.060	60.00	46.00	8.50	9.00
512.063	63.00	48.00	10.50	11.00
512.065	65.00	50.00	10.50	11.00
512.070	70.00	55.00	10.50	11.00
512.S75	75.00	60.00	10.50	11.00
512.080	80.00	65.00	10.50	11.00
512.085	85.00	70.00	10.50	11.00
512.090	90.00	75.00	10.50	11.00
512.095	95.00	80.00	10.50	11.00
512.100	100.00	85.00	12.00	12.50
512.105	105.00	90.00	12.00	12.50
512.110	110.00	95.00	12.00	12.50
512.115	115.00	100.00	12.00	12.50
512.120	120.00	105.00	12.00	12.50
512.125	125.00	102.00	15.50	16.00
512.130	130.00	107.00	15.50	16.00
512.S130	130.00	116.00	17.00	17.50
512.135	135.00	112.00	15.50	16.00

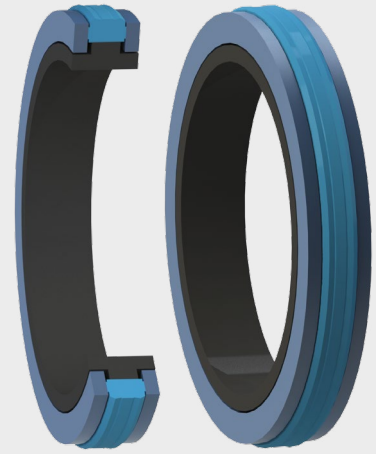
Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.20
512.S140	140.00	115.00	15.50	16.00
512.140	140.00	117.00	15.50	16.00
512.150	150.00	127.00	15.50	16.00
512.S150	150.00	134.00	15.50	16.00
512.160	160.00	137.00	15.50	16.00
512.170	170.00	147.00	15.50	16.00
512.180	180.00	157.00	15.50	16.00
512.185	185.00	162.00	15.50	16.00
512.190	190.00	167.00	15.50	16.00
512.200	200.00	177.00	15.50	16.00
512.2210	210.00	187.00	15.50	16.00
512.2220	220.00	197.00	15.50	16.00
512.225	225.00	202.00	15.50	16.00
512.2230	230.00	207.00	15.50	16.00
512.2240	240.00	217.00	15.50	16.00
512.2250	250.00	222.00	17.00	17.50
512.2260	260.00	232.00	17.00	17.50
512.2270	270.00	242.00	17.00	17.50
512.280	280.00	252.00	17.00	17.50
512.2300	300.00	272.00	17.00	17.50
512.2320	320.00	292.00	17.00	17.50

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 513



DESCRIPTION

The BECA 513 profile is a high-performing, double acting compact piston seal composed of a dynamic polyurethane friction ring, flexible pre-tightened NBR ring and two POM back-up rings.

ADVANTAGES

Very good sealing effect
Increase in possible extrusion gaps
Excellent extrusion resistance even during pressure peaks
Excellent abrasion resistance
Assembled by deformation

APPLICATIONS

Mobile hydraulics
Hydraulic cylinders

MATERIALS

Profiled seal

NBR 80 Shore A

Friction ring

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

Back-up rings

Polyoxymethylene - POM

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

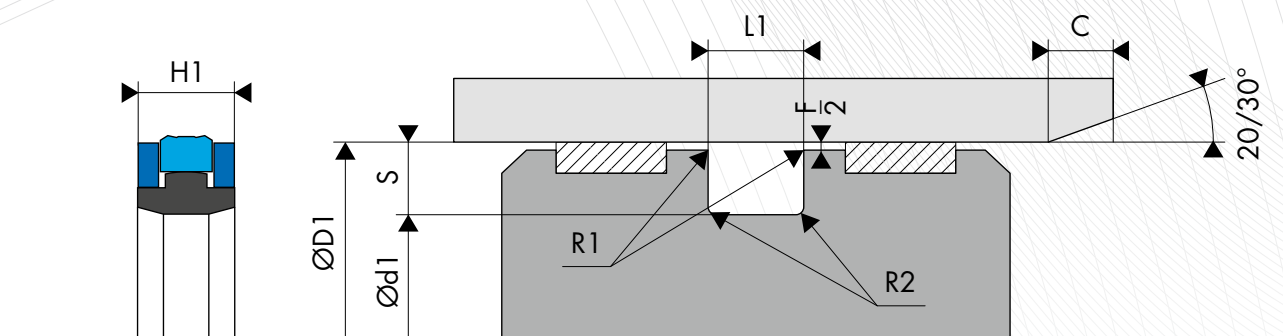
Pressure MPa	Radial gap F/2
10 MPa	0.50
25 MPa	0.50
35 MPa	0.40
40 MPa	0.30

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
5.00	0.20	0.70	2.50
7.50	0.20	1.20	5.00
11.50	0.20	1.80	8.00
14.00	0.20	2.50	10.00

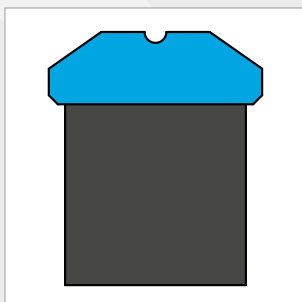


DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.20
513.050	50.00	36.00	8.50	9.00
513.060	60.00	46.00	8.50	9.00
513.063	63.00	48.00	10.50	11.00
513.065	65.00	50.00	10.50	11.00
513.070	70.00	55.00	10.50	11.00
513.075	75.00	60.00	10.50	11.00
513.080	80.00	65.00	10.50	11.00
513.085	85.00	70.00	10.50	11.00
513.090	90.00	75.00	10.50	11.00
513.095	95.00	80.00	10.50	11.00
513.100	100.00	85.00	12.00	12.50
513.105	105.00	90.00	12.00	12.50
513.110	110.00	95.00	12.00	12.50
513.115	115.00	100.00	12.00	12.50
513.120	120.00	105.00	12.00	12.50
513.125	125.00	102.00	15.50	16.00
513.130	130.00	107.00	15.50	16.00
513.135	135.00	112.00	15.50	16.00
513.140	140.00	117.00	15.50	16.00

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.20
513.150	150.00	127.00	15.50	16.00
513.160	160.00	137.00	15.50	16.00
513.170	170.00	147.00	15.50	16.00
513.180	180.00	157.00	15.50	16.00
513.185	185.00	162.00	15.50	16.00
513.190	190.00	167.00	15.50	16.00
513.200	200.00	177.00	15.50	16.00
513.210	210.00	187.00	15.50	16.00
513.220	220.00	197.00	15.50	16.00
513.225	225.00	202.00	15.50	16.00
513.230	230.00	207.00	15.50	16.00
513.240	240.00	217.00	15.50	16.00
513.250	250.00	222.00	17.00	17.50
513.260	260.00	232.00	17.00	17.50
513.270	270.00	242.00	17.00	17.50
513.280	280.00	252.00	17.00	17.50
513.300	300.00	272.00	17.00	17.50
513.320	320.00	292.00	17.00	17.50

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 519



DESCRIPTION

The BECA 519 profile is a double acting composite piston seal composed of a polyurethane friction ring and a flexible rubber ring.

ADVANTAGES

Good sealing in static and dynamic applications

The square ring does not twist under pressure

Suitable for reduced axial size

APPLICATIONS

Mobile hydraulics

Injection presses

Hydraulic cylinders

MATERIALS

Profiled seal

NBR 70 Shore A if $\varnothing D1 \leq 63.00$ mm

NBR 80 Shore A if $\varnothing D1 > 63.00$ mm

Friction ring

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

TPC-E (Hytrel)

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

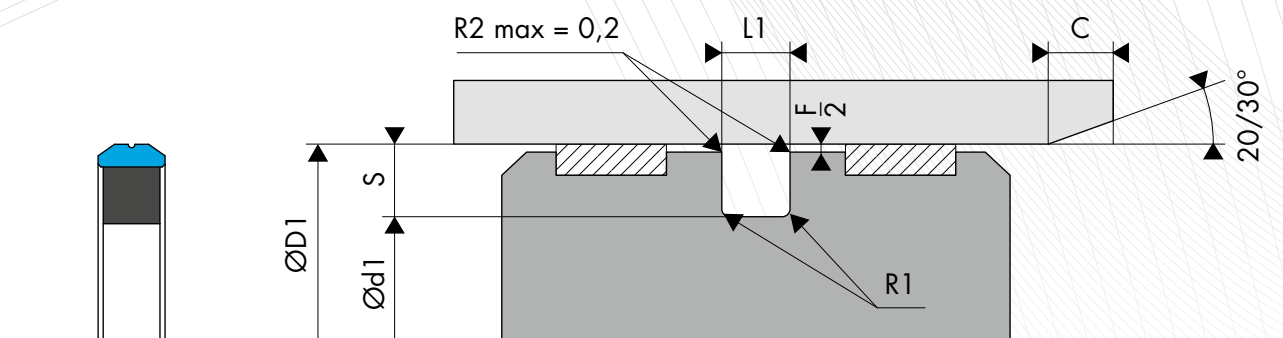
Radial section S	Radial gap F/2			
	10 MPa	25 MPa	35 MPa	40 MPa
3.75	0.30	0.20	---	---
5.50	0.40	0.30	0.20	---
7.75	0.50	0.40	0.30	0.25
10.50	0.60	0.50	0.40	0.35
12.50	0.65	0.55	0.45	0.40

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 μm	$\leq 1.6 \mu\text{m}$	$\leq 3.2 \mu\text{m}$
Rz	0.63 - 2.5 μm	$\leq 6.3 \mu\text{m}$	$\leq 10.0 \mu\text{m}$
Rmax	1.0 - 4.0 μm	$\leq 10.0 \mu\text{m}$	$\leq 16.0 \mu\text{m}$

CHAMFERS AND RADIUS

Radial section S	Radius R1	Chamfer C
3.75	0.20	2.00
5.50	0.30	2.50
7.75	0.30	3.00
10.50	0.40	5.00
12.50	0.40	9.00

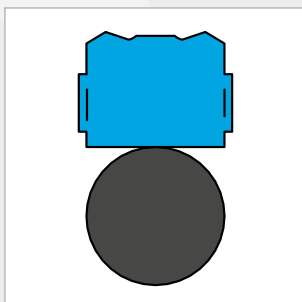


DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
519.020	20.00	12.50	3.20
519.025	25.00	17.50	3.20
519.030	30.00	22.50	3.20
519.032	32.00	24.50	3.20
519.040	40.00	24.50	6.30
519.1040	40.00	27.00	6.30
519.2040	40.00	29.00	4.20
519.045	45.00	29.50	6.30
519.1045	45.00	32.00	6.30
519.050	50.00	34.50	6.30
519.1050	50.00	37.00	6.30
519.2050	50.00	39.00	4.20
519.055	55.00	39.50	6.30
519.155	55.00	44.00	4.20
519.058	58.00	45.00	6.30
519.060	60.00	44.50	6.30
519.1060	60.00	49.00	4.20
519.063	63.00	47.50	6.30
519.1063	63.00	50.00	6.30
519.2063	63.00	52.00	4.20
519.3063	63.00	53.00	5.00
519.065	65.00	49.50	6.30
519.1065	65.00	52.00	6.30
519.2065	65.00	54.00	4.20
519.3065	65.00	54.00	6.30
519.070	70.00	54.50	6.30
519.1070	70.00	57.00	6.30
519.2070	70.00	59.00	4.20

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
519.712	71.20	66.40	7.20
519.075	75.00	59.50	6.30
519.1075	75.00	62.00	6.30
519.2075	75.00	64.00	4.20
519.080	80.00	59.00	8.10
519.1080	80.00	64.50	6.30
519.2080	80.00	66.50	6.30
519.085	85.00	71.50	6.30
519.090	90.00	74.50	6.30
519.1090	90.00	74.50	7.10
519.095	95.00	79.50	6.30
519.100	100.00	79.00	8.10
519.1100	100.00	84.50	6.30
519.1100	100.00	86.50	6.30
519.105	105.00	89.50	6.30
519.110	110.00	89.00	8.10
519.1110	110.00	94.50	6.30
519.2110	110.00	94.50	6.30
519.120	120.00	99.00	10.50
519.1120	120.00	104.50	6.30
519.125	125.00	104.00	8.10
519.1125	125.00	109.50	6.30
519.130	130.00	109.00	8.10
519.140	140.00	119.00	8.10
519.150	150.00	129.00	10.50
519.160	160.00	139.00	8.10
519.180	180.00	159.00	7.80
519.1180	180.00	159.00	8.10

The figures highlighted in bold correspond to the dimensions for standard ISO 7425/1, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA

520-522-524



DESCRIPTION

The BECA 520-522-524 profiles are double acting composite piston seals composed of a pre-tightened rubber O'Ring and a custom-made polyurethane friction ring.

ADVANTAGES

Optimal sealing in static and dynamic applications
Excellent abrasion and wear resistance
Assembled by deformation

APPLICATIONS

Agriculture
Light and medium-sized industry
Machine tools
Material handling/Lifting

MATERIALS

Friction ring

PU 93 Shore A - Blue
PU 96 Shore A - Blue
High temp. PU 96 Shore A - Beige
TPC-E (Hytrel)

O'Ring

NBR 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	25 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2
2.45	0.20
3.75	0.25
5.50	0.25
7.75	0.30
10.50	0.30
12.25	0.35
14.00	0.35
19.00	0.40

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

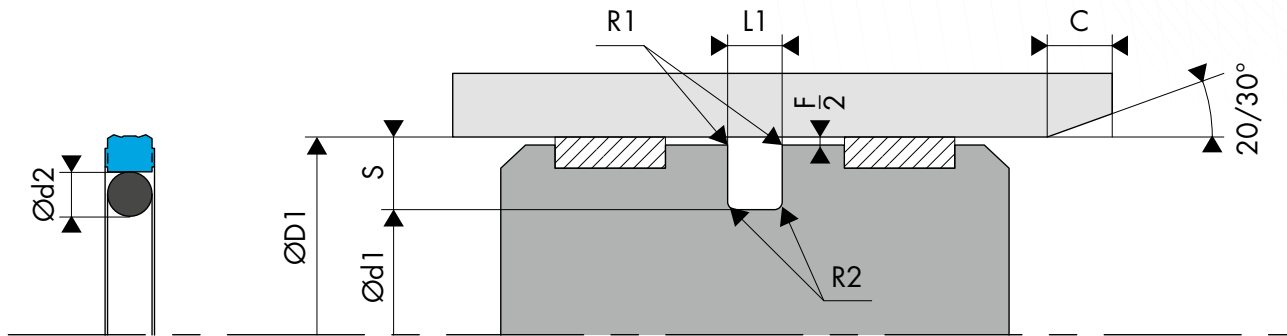
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
2.45	0.30	0.40	3.00
3.75	0.30	0.60	3.00
5.50	0.30	1.00	3.00
7.75	0.30	1.30	5.00
10.50	0.30	1.80	6.00
12.25	0.30	1.80	8.00
14.00	0.30	2.50	10.00
19.00	0.30	3.00	12.00

TABLE MATERIALS

Friction ring					O'Ring			Mating surface material
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature	
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
PU	U	Polyurethane	Blue	Strong mechanical resistance Good resistance to wear and abrasion High elasticity modulus	K6	NBR 70 Shore A	-30°C/+90°C	
PUHT	U	High-temperature polyurethane	White or off-white	Good flexibility Very good resistance to ozone and oxidation	K6	NBR 70 Shore A	-30°C/+100°C	

Other grades of materials are available depending on your specificities.



INSTALLATION DIMENSIONS

Bore diameter ØD1 H9			Groove diameter	Groove width	Radial section	O'Ring cross-section
BECA 520 Standard range	BECA 522 Light range	BECA 524 Heavy-duty range	Ød1 h9	L1 0/+0.20	S	Ød2
8.0 - 14.9	15.0 - 39.9	---	D1 - 4.90	2.20	2.45	1.78
15.0 - 39.9	40.0 - 79.9	---	D1 - 7.50	3.20	3.75	2.62
40.0 - 79.9	80.0 - 132.9	15.0 - 39.9	D1 - 11.00	4.20	5.50	3.53
80.0 - 132.9	133.0 - 329.9	40.0 - 79.9	D1 - 15.50	6.30	7.75	5.33
133.0 - 329.9	330.0 - 669.9	80.0 - 132.9	D1 - 21.00	8.10	10.50	6.99
330.0 - 669.9	670.0 - 999.9	133.0 - 329.9	D1 - 24.50	8.10	12.25	6.99
670.0 - 999.9	1000.0 - **	330.0 - 669.9	D1 - 28.00	9.50	14.00	8.40
1000.0 - **	---	1000.0 - **	D1 - 38.00	13.80	19.00	12.00

EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Polyurethane friction ring - Code PU
 _____ : NBR 70 Shore A O'Ring - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 39.00 mm
Part number _____ : 520. 050PUK6

Part number -

520. 050 PU K6
 Family
 Bore diameter
 Friction ring material*
 O'Ring material*

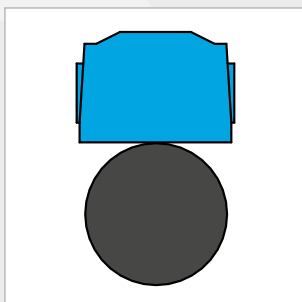
* The codes that define the materials are set out in the materials table on the previous page.

○ DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
520.008	8.00	3.10	2.20
520.010	10.00	5.10	2.20
520.012	12.00	7.10	2.20
520.014	14.00	9.10	2.20
520.015	15.00	7.50	3.20
520.016	16.00	8.50	3.20
520.018	18.00	10.50	3.20
520.020	20.00	12.50	3.20
520.021	21.00	13.50	3.20
520.022	22.00	14.50	3.20
520.024	24.00	16.50	3.20
524.025	25.00	14.00	4.20
520.025	25.00	17.50	3.20
520.028	28.00	20.50	3.20
520.030	30.00	22.50	3.20
524.032	32.00	21.00	4.20
520.032	32.00	24.50	3.20
520.035	35.00	27.50	3.20
520.036	36.00	28.50	3.20
520.038	38.00	30.50	3.20
520.040	40.00	29.00	4.20
522.040	40.00	32.50	3.20
520.042	42.00	31.00	4.20
520.045	45.00	34.00	4.20
520.048	48.00	37.00	4.20
524.050	50.00	34.50	6.30
520.050	50.00	39.00	4.20
520.052	52.00	41.00	4.20
520.053	53.00	42.00	4.20
520.055	55.00	44.00	4.20
520.057	57.00	46.00	4.20
520.058	58.00	47.00	4.20
520.060	60.00	49.00	4.20
520.062	62.00	51.00	4.20
524.063	63.00	47.50	6.30
520.063	63.00	52.00	4.20
520.065	65.00	54.00	4.20
520.068	68.00	57.00	4.20
520.070	70.00	59.00	4.20
520.072	72.00	61.00	4.20
520.075	75.00	64.00	4.20
520.080	80.00	64.50	6.30
522.080	80.00	69.00	4.20
520.082	82.00	66.50	6.30
520.085	85.00	69.50	6.30
520.087	87.00	71.50	6.30
520.090	90.00	74.50	6.30
520.092	92.00	76.50	6.30
520.095	95.00	79.50	6.30
520.100	100.00	84.50	6.30
522.100	100.00	89.00	4.20
520.105	105.00	89.50	6.30
520.108	108.00	92.50	6.30
520.110	110.00	94.50	6.30
520.115	115.00	99.50	6.30
520.120	120.00	104.50	6.30
524.125	125.00	104.00	8.10
520.125	125.00	109.50	6.30
520.127	127.00	111.50	6.30
520.130	130.00	114.50	6.30
520.132	132.00	116.50	6.30
520.135	135.00	114.00	8.10
520.140	140.00	119.00	8.10

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
520.145	145.00	124.00	8.10
520.150	150.00	129.00	8.10
520.155	155.00	134.00	8.10
520.160	160.00	139.00	8.10
522.160	160.00	144.50	6.30
520.165	165.00	144.00	8.10
520.170	170.00	149.00	8.10
520.175	175.00	154.00	8.10
520.180	180.00	159.00	8.10
520.185	185.00	164.00	8.10
520.190	190.00	169.00	8.10
520.195	195.00	174.00	8.10
520.200	200.00	179.00	8.10
522.200	200.00	184.50	6.30
520.205	205.00	184.00	8.10
520.210	210.00	189.00	8.10
520.215	215.00	194.00	8.10
520.220	220.00	199.00	8.10
520.230	230.00	209.00	8.10
520.240	240.00	219.00	8.10
524.250	250.00	225.50	8.10
520.250	250.00	229.00	8.10
520.260	260.00	239.00	8.10
520.270	270.00	249.00	8.10
520.280	280.00	259.00	8.10
520.290	290.00	269.00	8.10
520.300	300.00	279.00	8.10
520.310	310.00	289.00	8.10
524.320	320.00	295.50	8.10
520.320	320.00	299.00	8.10
520.330	330.00	305.50	8.10
520.340	340.00	315.50	8.10
520.350	350.00	325.50	8.10
520.360	360.00	335.50	8.10
520.370	370.00	345.50	8.10
520.380	380.00	355.50	8.10
520.390	390.00	365.50	8.10
520.400	400.00	375.50	8.10
520.410	410.00	385.50	8.10
520.420	420.00	395.50	8.10
520.430	430.00	405.50	8.10
520.440	440.00	415.50	8.10
520.450	450.00	425.50	8.10
520.460	460.00	435.50	8.10
520.470	470.00	445.50	8.10
520.480	480.00	455.50	8.10
520.490	490.00	465.50	8.10
520.500	500.00	475.50	8.10

The figures highlighted in bold correspond to the dimensions for standard ISO 7425/1, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 525



DESCRIPTION

The BECA 525 profile is a double acting composite piston seal composed of a pre-tightened rubber O'Ring and a trapezoidal friction ring made from polyurethane or TPC (Hytrel) depending on the type of application.

ADVANTAGES

Optimal sealing in static and dynamic applications

Excellent abrasion and wear resistance

APPLICATIONS

Agriculture

Middle-sized and heavy industry

Machine tools

Material handling/Lifting

MATERIALS

Friction ring

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

TPC-E (Hytrel)

O'Ring

NBR 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	25 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2
2.45	0.20
3.75	0.30
5.50	0.30
7.75	0.40
10.50	0.40
12.25	0.50
14.00	0.60
19.00	0.70

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

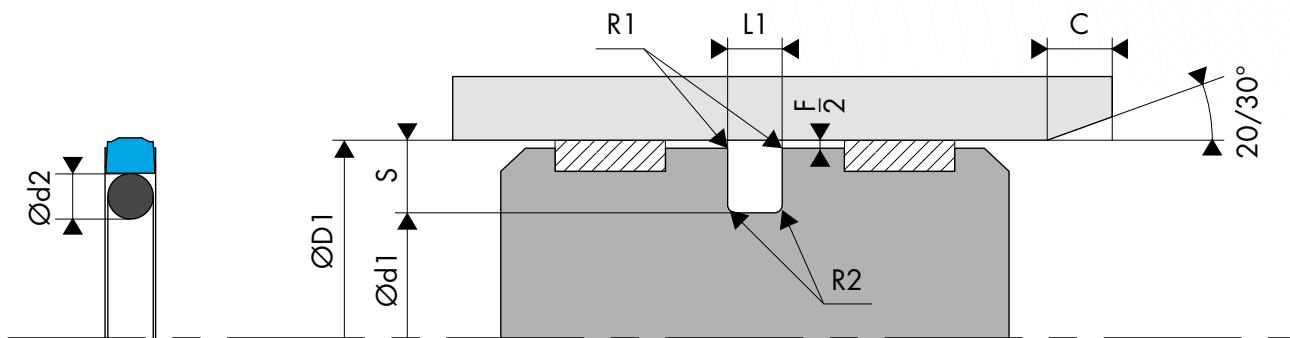
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
2.45	0.30	0.40	3.00
3.75	0.30	0.60	3.00
5.50	0.30	1.00	3.00
7.75	0.30	1.30	5.00
10.50	0.30	1.80	6.00
12.25	0.30	1.80	8.00
14.00	0.30	2.50	10.00
19.00	0.30	3.00	12.00

TABLE MATERIALS

Friction ring					O'Ring			Mating surface material
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature	
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
PU	U	Polyurethane	Blue	Strong mechanical resistance Good resistance to wear and abrasion High elasticity modulus Good flexibility	K6	NBR 70 Shore A	-30°C/+90°C	
PUHT	U	High-temperature polyurethane	White or off-white	Very good resistance to ozone and oxidation	K6	NBR 70 Shore A	-30°C/+100°C	

Other grades of materials are available depending on your specificities.



INSTALLATION DIMENSIONS

Bore diameter ØD1 H9			Groove diameter	Groove width	Radial section	O'Ring cross-section
BECA 525.1 Standard range	BECA 525.3 Light range	BECA 525.2 Heavy-duty range	Ød1 h9	L1 0/+0.20	S	Ød2
8.0 - 14.9	15.0 - 39.9	---	D1 - 4.90	2.20	2.45	1.78
15.0 - 39.9	40.0 - 79.9	---	D1 - 7.50	3.20	3.75	2.62
40.0 - 79.9	80.0 - 132.9	15.0 - 39.9	D1 - 11.00	4.20	5.50	3.53
80.0 - 132.9	133.0 - 329.9	40.0 - 79.9	D1 - 15.50	6.30	7.75	5.33
133.0 - 329.9	330.0 - 669.9	80.0 - 132.9	D1 - 21.00	8.10	10.50	6.99
330.0 - 669.9	670.0 - 999.9	133.0 - 329.9	D1 - 24.50	8.10	12.25	6.99
670.0 - 999.9	1000.0 - **	330.0 - 669.9	D1 - 28.00	9.50	14.00	8.40
1000.0 - **	---	1000.0 - **	D1 - 38.00	13.80	19.00	12.00

EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Polyurethane friction ring - Code U
 _____ : NBR 70 Shore A O'Ring - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 39.00 mm
Part number _____ : 525.1050UK6

Part number -

525.1 050 U K6

Family
 Bore diameter
 Friction ring material*
 O'Ring material*

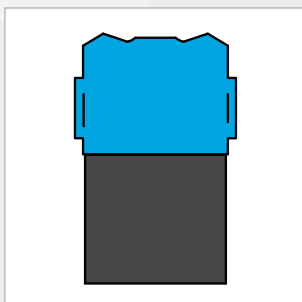
* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
525.1008	8.00	3.10	2.20
525.1010	10.00	5.10	2.20
525.1012	12.00	7.10	2.20
525.1014	14.00	9.10	2.20
525.1015	15.00	7.50	3.20
525.1016	16.00	8.50	3.20
525.3016	16.00	11.10	2.20
525.1018	18.00	10.50	3.20
525.1020	20.00	12.50	3.20
525.3020	20.00	15.10	2.20
525.1021	21.00	13.50	3.20
525.1022	22.00	14.50	3.20
525.1024	24.00	16.50	3.20
525.2025	25.00	14.00	4.20
525.1025	25.00	17.50	3.20
525.1028	28.00	20.50	3.20
525.1030	30.00	22.50	3.20
525.2032	32.00	21.00	4.20
525.1032	32.00	24.50	3.20
525.1035	35.00	27.50	3.20
525.1036	36.00	28.50	3.20
525.1038	38.00	30.50	3.20
525.1040	40.00	29.00	4.20
525.3040	40.00	32.50	3.20
525.1042	42.00	31.00	4.20
525.1045	45.00	34.00	4.20
525.1048	48.00	37.00	4.20
525.2050	50.00	34.50	6.30
525.1050	50.00	39.00	4.20
525.1052	52.00	41.00	4.20
525.1053	53.00	42.00	4.20
525.1055	55.00	44.00	4.20
525.1057	57.00	46.00	4.20
525.1058	58.00	47.00	4.20
525.1060	60.00	49.00	4.20
525.1062	62.00	51.00	4.20
525.2063	63.00	47.50	6.30
525.1063	63.00	52.00	4.20
525.1065	65.00	54.00	4.20
525.1068	68.00	57.00	4.20
525.1070	70.00	59.00	4.20
525.1072	72.00	61.00	4.20
525.1075	75.00	64.00	4.20
525.1080	80.00	64.50	6.30
525.3080	80.00	69.00	4.20
525.1082	82.00	66.50	6.30
525.1085	85.00	69.50	6.30
525.1087	87.00	71.50	6.30
525.1090	90.00	74.50	6.30
525.1092	92.00	76.50	6.30
525.1095	95.00	79.50	6.30
525.1100	100.00	84.50	6.30
525.3100	100.00	89.00	4.20
525.1105	105.00	89.50	6.30
525.1108	108.00	92.50	6.30
525.1110	110.00	94.50	6.30
525.1115	115.00	99.50	6.30
525.1120	120.00	104.50	6.30
525.2125	125.00	104.00	8.10
525.1125	125.00	109.50	6.30
525.1127	127.00	111.50	6.30
525.1130	130.00	114.50	6.30
525.1132	132.00	116.50	6.30

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
525.1135	135.00	114.00	8.10
525.1140	140.00	119.00	8.10
525.1145	145.00	124.00	8.10
525.1150	150.00	129.00	8.10
525.1155	155.00	134.00	8.10
525.1160	160.00	139.00	8.10
525.3160	160.00	144.50	6.30
525.1165	165.00	144.00	8.10
525.1170	170.00	149.00	8.10
525.1175	175.00	154.00	8.10
525.1180	180.00	159.00	8.10
525.1185	185.00	164.00	8.10
525.1190	190.00	169.00	8.10
525.1195	195.00	174.00	8.10
525.1200	200.00	179.00	8.10
525.3200	200.00	184.50	6.30
525.1205	205.00	184.00	8.10
525.1210	210.00	189.00	8.10
525.1215	215.00	194.00	8.10
525.1220	220.00	199.00	8.10
525.1230	230.00	209.00	8.10
525.1240	240.00	219.00	8.10
525.2250	250.00	225.50	8.10
525.1250	250.00	229.00	8.10
525.1260	260.00	239.00	8.10
525.1270	270.00	249.00	8.10
525.1280	280.00	259.00	8.10
525.1290	290.00	269.00	8.10
525.1300	300.00	279.00	8.10
525.1310	310.00	289.00	8.10
525.2320	320.00	295.50	8.10
525.1320	320.00	299.00	8.10
525.1330	330.00	305.50	8.10
525.1340	340.00	315.50	8.10
525.1350	350.00	325.50	8.10
525.1360	360.00	335.50	8.10
525.1370	370.00	345.50	8.10
525.1380	380.00	355.50	8.10
525.1390	390.00	365.50	8.10
525.1400	400.00	375.50	8.10
525.1410	410.00	385.50	8.10
525.1420	420.00	395.50	8.10
525.1430	430.00	405.50	8.10
525.1440	440.00	415.50	8.10
525.1450	450.00	425.50	8.10
525.1460	460.00	435.50	8.10
525.1470	470.00	445.50	8.10
525.1480	480.00	455.50	8.10
525.1490	490.00	465.50	8.10
525.1500	500.00	475.50	8.10

The figures highlighted in bold correspond to the dimensions for standard ISO 7425/1, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 530



DESCRIPTION

The BECA 530 profile is a double acting composite piston seal composed of a pre-tightened rubber square ring and a specific polyurethane friction ring.

ADVANTAGES

Optimal sealing in static and dynamic applications

Excellent abrasion and wear resistance

The square ring does not twist under pressure

APPLICATIONS

Agriculture

Light and medium-sized industry

Machine tools

Material handling/Lifting

MATERIALS

Friction ring

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

TPC-E (Hytrel)

Square ring

NBR 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	25 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2
2.45	0.20
3.75	0.25
5.50	0.25
7.75	0.30
10.50	0.30
12.25	0.35
14.00	0.35
19.00	0.40

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

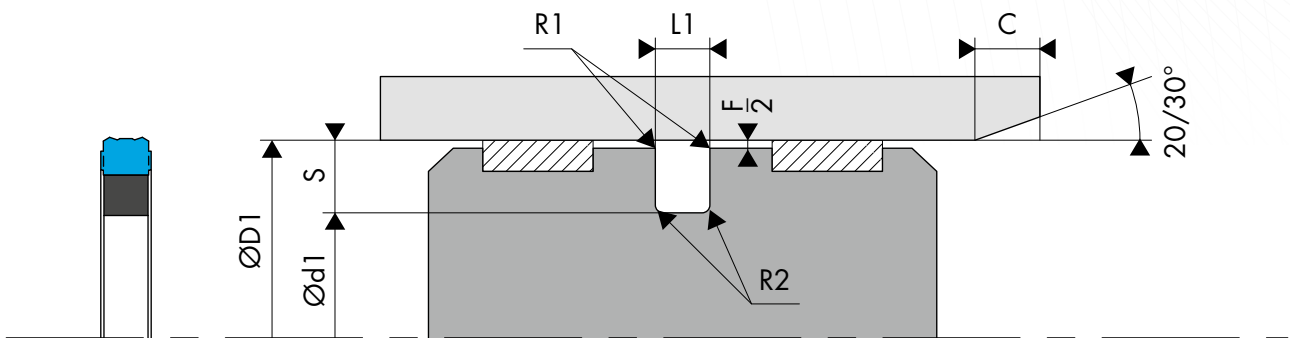
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
2.45	0.30	0.40	2.00
3.75	0.30	0.60	2.00
5.50	0.30	1.00	2.50
7.75	0.30	1.30	5.00
10.50	0.30	1.80	5.00
12.25	0.30	1.80	6.00
14.00	0.30	2.50	8.00
19.00	0.30	3.00	10.00

TABLE MATERIALS

Friction ring					Square ring			Mating surface material
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature	
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
PU	U	Polyurethane	Blue	Strong mechanical resistance Good resistance to wear and abrasion High elasticity modulus Good flexibility	K6	NBR 70 Shore A	-30°C/+90°C	
PUHT	U	High-temperature polyurethane	White or off-white	Very good resistance to ozone and oxidation	K6	NBR 70 Shore A	-30°C/+100°C	

Other grades of materials are available depending on your specificities.



INSTALLATION DIMENSIONS

Bore diameter ØD1 H9			Groove diameter	Groove width	Radial section	Square ring
BECA 530.1 Standard range	BECA 530.3 Light range	BECA 530.2 Heavy-duty range	Ød1 h9	L1 0/+0.20	S	Thickness
8.0 - 14.9	15.0 - 39.9	---	D1 - 4.90	2.20	2.45	1.78
15.0 - 39.9	40.0 - 79.9	---	D1 - 7.50	3.20	3.75	2.62
40.0 - 79.9	80.0 - 132.9	15.0 - 39.9	D1 - 11.00	4.20	5.50	3.53
80.0 - 132.9	133.0 - 329.9	40.0 - 79.9	D1 - 15.50	6.30	7.75	5.33
133.0 - 329.9	330.0 - 669.9	80.0 - 132.9	D1 - 21.00	8.10	10.50	6.99
330.0 - 669.9	670.0 - 999.9	133.0 - 329.9	D1 - 24.50	8.10	12.25	6.99
670.0 - 999.9	1000.0 - **	330.0 - 669.9	D1 - 28.00	9.50	14.00	8.40
1000.0 - **	---	1000.0 - **	D1 - 38.00	13.80	19.00	12.00

EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Polyurethane friction ring - Code U
 _____ : NBR 70 Shore A square ring - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 39.00 mm
Part number _____ : 530.1050UK6

Part number -

530.1 050 U K6

Family
 Bore diameter
 Friction ring material*
 Square ring material*

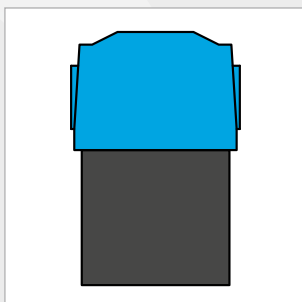
* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
530.1008	8.00	3.10	2.20
530.1010	10.00	5.10	2.20
530.1012	12.00	7.10	2.20
530.1014	14.00	9.10	2.20
530.1015	15.00	7.50	3.20
530.1016	16.00	8.50	3.20
530.3016	16.00	11.10	2.20
530.1018	18.00	10.50	3.20
530.1020	20.00	12.50	3.20
530.3020	20.00	15.10	2.20
530.1021	21.00	13.50	3.20
530.1022	22.00	14.50	3.20
530.1024	24.00	16.50	3.20
530.2025	25.00	14.00	4.20
530.1025	25.00	17.50	3.20
530.1028	28.00	20.50	3.20
530.1030	30.00	22.50	3.20
530.2032	32.00	21.00	4.20
530.1032	32.00	24.50	3.20
530.1035	35.00	27.50	3.20
530.1036	36.00	28.50	3.20
530.1038	38.00	30.50	3.20
530.1040	40.00	29.00	4.20
530.3040	40.00	32.50	3.20
530.1042	42.00	31.00	4.20
530.1045	45.00	34.00	4.20
530.1048	48.00	37.00	4.20
530.2050	50.00	34.50	6.30
530.1050	50.00	39.00	4.20
530.1052	52.00	41.00	4.20
530.1053	53.00	42.00	4.20
530.1055	55.00	44.00	4.20
530.1057	57.00	46.00	4.20
530.1058	58.00	47.00	4.20
530.1060	60.00	49.00	4.20
530.1062	62.00	51.00	4.20
530.2063	63.00	47.50	6.30
530.1063	63.00	52.00	4.20
530.1065	65.00	54.00	4.20
530.1068	68.00	57.00	4.20
530.1070	70.00	59.00	4.20
530.1072	72.00	61.00	4.20
530.1075	75.00	64.00	4.20
530.1080	80.00	64.50	6.30
530.3080	80.00	69.00	4.20
530.1082	82.00	66.50	6.30
530.1085	85.00	69.50	6.30
530.1087	87.00	71.50	6.30
530.1090	90.00	74.50	6.30
530.1092	92.00	76.50	6.30
530.1095	95.00	79.50	6.30
530.1100	100.00	84.50	6.30
530.3100	100.00	89.00	4.20
530.1105	105.00	89.50	6.30
530.1108	108.00	92.50	6.30
530.1110	110.00	94.50	6.30
530.1115	115.00	99.50	6.30
530.1120	120.00	104.50	6.30
530.2125	125.00	104.00	8.10
530.1125	125.00	109.50	6.30
530.1127	127.00	111.50	6.30
530.1130	130.00	114.50	6.30
530.1132	132.00	116.50	6.30

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
530.1135	135.00	114.00	8.10
530.1140	140.00	119.00	8.10
530.1145	145.00	124.00	8.10
530.1150	150.00	129.00	8.10
530.1155	155.00	134.00	8.10
530.1160	160.00	139.00	8.10
530.3160	160.00	144.50	6.30
530.1165	165.00	144.00	8.10
530.1170	170.00	149.00	8.10
530.1175	175.00	154.00	8.10
530.1180	180.00	159.00	8.10
530.1185	185.00	164.00	8.10
530.1190	190.00	169.00	8.10
530.1195	195.00	174.00	8.10
530.1200	200.00	179.00	8.10
530.3200	200.00	184.50	6.30
530.1205	205.00	184.00	8.10
530.1210	210.00	189.00	8.10
530.1215	215.00	194.00	8.10
530.1220	220.00	199.00	8.10
530.1230	230.00	209.00	8.10
530.1240	240.00	219.00	8.10
530.2250	250.00	225.50	8.10
530.1250	250.00	229.00	8.10
530.1260	260.00	239.00	8.10
530.1270	270.00	249.00	8.10
530.1280	280.00	259.00	8.10
530.1290	290.00	269.00	8.10
530.1300	300.00	279.00	8.10
530.1310	310.00	289.00	8.10
530.2320	320.00	295.50	8.10
530.1320	320.00	299.00	8.10
530.1330	330.00	305.50	8.10
530.1340	340.00	315.50	8.10
530.1350	350.00	325.50	8.10
530.1360	360.00	335.50	8.10
530.1370	370.00	345.50	8.10
530.1380	380.00	355.50	8.10
530.1390	390.00	365.50	8.10
530.1400	400.00	375.50	8.10
530.1410	410.00	385.50	8.10
530.1420	420.00	395.50	8.10
530.1430	430.00	405.50	8.10
530.1440	440.00	415.50	8.10
530.1450	450.00	425.50	8.10
530.1460	460.00	435.50	8.10
530.1470	470.00	445.50	8.10
530.1480	480.00	455.50	8.10
530.1490	490.00	465.50	8.10
530.1500	500.00	475.50	8.10

The figures highlighted in bold correspond to the dimensions for standard ISO 7425/1, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 535



DESCRIPTION

The BECA 535 profile is a double acting composite piston seal composed of a pre-tightened rubber square ring and a trapezoidal polyurethane or TPC (Hytrel) friction ring, depending on the type of application.

ADVANTAGES

Optimal sealing in static and dynamic applications

Excellent abrasion and wear resistance

The square ring does not twist under pressure

APPLICATIONS

Agriculture

Middle-sized and heavy industry

Machine tools

Material handling/Lifting

MATERIALS

Friction ring

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

TPC-E (Hytrel)

Square ring

NBR 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	25 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2
2.45	0.20
3.75	0.30
5.50	0.30
7.75	0.40
10.50	0.40
12.25	0.50
14.00	0.60
19.00	0.70

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

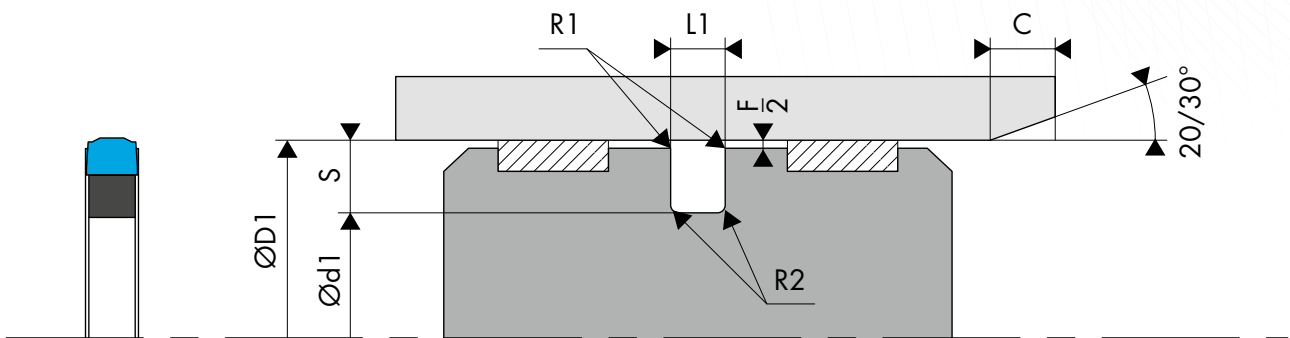
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
2.45	0.30	0.40	2.00
3.75	0.30	0.60	2.00
5.50	0.30	1.00	2.50
7.75	0.30	1.30	5.00
10.50	0.30	1.80	5.00
12.25	0.30	1.80	6.00
14.00	0.30	2.50	8.00
19.00	0.30	3.00	10.00

TABLE MATERIALS

Friction ring					Square ring			Mating surface material
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature	
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
PU	U	Polyurethane	Blue	Strong mechanical resistance Good resistance to wear and abrasion High elasticity modulus	K6	NBR 70 Shore A	-30°C/+90°C	
PUHT	U	High-temperature polyurethane	White or off-white	Good flexibility Very good resistance to ozone and oxidation	K6	NBR 70 Shore A	-30°C/+100°C	

Other grades of materials are available depending on your specificities.



INSTALLATION DIMENSIONS

Bore diameter ØD1 H9			Groove diameter	Groove width	Radial section	Square ring
BECA 535.1 Standard range	BECA 535.3 Light range	BECA 535.2 Heavy-duty range	Ød1 h9	L1 0/+0.20	S	Thickness
8.0 - 14.9	15.0 - 39.9	---	D1 - 4.90	2.20	2.45	1.78
15.0 - 39.9	40.0 - 79.9	---	D1 - 7.50	3.20	3.75	2.62
40.0 - 79.9	80.0 - 132.9	15.0 - 39.9	D1 - 11.00	4.20	5.50	3.53
80.0 - 132.9	133.0 - 329.9	40.0 - 79.9	D1 - 15.50	6.30	7.75	5.33
133.0 - 329.9	330.0 - 669.9	80.0 - 132.9	D1 - 21.00	8.10	10.50	6.99
330.0 - 669.9	670.0 - 999.9	133.0 - 329.9	D1 - 24.50	8.10	12.25	6.99
670.0 - 999.9	1000.0 - **	330.0 - 669.9	D1 - 28.00	9.50	14.00	8.40
1000.0 - **	---	1000.0 - **	D1 - 38.00	13.80	19.00	12.00

EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Polyurethane friction ring - Code U
 _____ : NBR 70 Shore A square ring - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 39.00 mm
Part number _____ : 535.1050UK6

Part number -

535.1	050	U	K6
Family	Bore diameter	Friction ring material*	Square ring material*

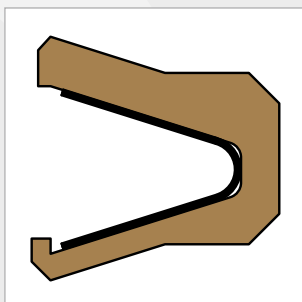
* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
535.1008	8.00	3.10	2.20
535.1010	10.00	5.10	2.20
535.1012	12.00	7.10	2.20
535.1014	14.00	9.10	2.20
535.1015	15.00	7.50	3.20
535.1016	16.00	8.50	3.20
535.3016	16.00	11.10	2.20
535.1018	18.00	10.50	3.20
535.1020	20.00	12.50	3.20
535.3020	20.00	15.10	2.20
535.1021	21.00	13.50	3.20
535.1022	22.00	14.50	3.20
535.1024	24.00	16.50	3.20
535.2025	25.00	14.00	4.20
535.1025	25.00	17.50	3.20
535.1028	28.00	20.50	3.20
535.1030	30.00	22.50	3.20
535.2032	32.00	21.00	4.20
535.1032	32.00	24.50	3.20
535.1035	35.00	27.50	3.20
535.1036	36.00	28.50	3.20
535.1038	38.00	30.50	3.20
535.1040	40.00	29.00	4.20
535.3040	40.00	32.50	3.20
535.1042	42.00	31.00	4.20
535.1045	45.00	34.00	4.20
535.1048	48.00	37.00	4.20
535.2050	50.00	34.50	6.30
535.1050	50.00	39.00	4.20
535.1052	52.00	41.00	4.20
535.1053	53.00	42.00	4.20
535.1055	55.00	44.00	4.20
535.1057	57.00	46.00	4.20
535.1058	58.00	47.00	4.20
535.1060	60.00	49.00	4.20
535.1062	62.00	51.00	4.20
535.2063	63.00	47.50	6.30
535.1063	63.00	52.00	4.20
535.1065	65.00	54.00	4.20
535.1068	68.00	57.00	4.20
535.1070	70.00	59.00	4.20
535.1072	72.00	61.00	4.20
535.1075	75.00	64.00	4.20
535.1080	80.00	64.50	6.30
535.3080	80.00	69.00	4.20
535.1082	82.00	66.50	6.30
535.1085	85.00	69.50	6.30
535.1087	87.00	71.50	6.30
535.1090	90.00	74.50	6.30
535.1092	92.00	76.50	6.30
535.1095	95.00	79.50	6.30
535.1100	100.00	84.50	6.30
535.3100	100.00	89.00	4.20
535.1105	105.00	89.50	6.30
535.1108	108.00	92.50	6.30
535.1110	110.00	94.50	6.30
535.1115	115.00	99.50	6.30
535.1120	120.00	104.50	6.30
535.2125	125.00	104.00	8.10
535.1125	125.00	109.50	6.30
535.1127	127.00	111.50	6.30
535.1130	130.00	114.50	6.30
535.1132	132.00	116.50	6.30

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
535.1135	135.00	114.00	8.10
535.1140	140.00	119.00	8.10
535.1145	145.00	124.00	8.10
535.1150	150.00	129.00	8.10
535.1155	155.00	134.00	8.10
535.1160	160.00	139.00	8.10
535.3160	160.00	144.50	6.30
535.1165	165.00	144.00	8.10
535.1170	170.00	149.00	8.10
535.1175	175.00	154.00	8.10
535.1180	180.00	159.00	8.10
535.1185	185.00	164.00	8.10
535.1190	190.00	169.00	8.10
535.1195	195.00	174.00	8.10
535.1200	200.00	179.00	8.10
535.3200	200.00	184.50	6.30
535.1205	205.00	184.00	8.10
535.1210	210.00	189.00	8.10
535.1215	215.00	194.00	8.10
535.1220	220.00	199.00	8.10
535.1230	230.00	209.00	8.10
535.1240	240.00	219.00	8.10
535.2250	250.00	225.50	8.10
535.1250	250.00	229.00	8.10
535.1260	260.00	239.00	8.10
535.1270	270.00	249.00	8.10
535.1280	280.00	259.00	8.10
535.1290	290.00	269.00	8.10
535.1300	300.00	279.00	8.10
535.1310	310.00	289.00	8.10
535.2320	320.00	295.50	8.10
535.1320	320.00	299.00	8.10
535.1330	330.00	305.50	8.10
535.1340	340.00	315.50	8.10
535.1350	350.00	325.50	8.10
535.1360	360.00	335.50	8.10
535.1370	370.00	345.50	8.10
535.1380	380.00	355.50	8.10
535.1390	390.00	365.50	8.10
535.1400	400.00	375.50	8.10
535.1410	410.00	385.50	8.10
535.1420	420.00	395.50	8.10
535.1430	430.00	405.50	8.10
535.1440	440.00	415.50	8.10
535.1450	450.00	425.50	8.10
535.1460	460.00	435.50	8.10
535.1470	470.00	445.50	8.10
535.1480	480.00	455.50	8.10
535.1490	490.00	465.50	8.10
535.1500	500.00	475.50	8.10

The figures highlighted in bold correspond to the dimensions for standard ISO 7425/1, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA

540-549



DESCRIPTION

The BECA 540 profile is a single acting piston seal composed of a profiled, filled PTFE U-ring type seal and a V-spring that is resistant to corrosion.

The BECA 549 profile is specially designed for applications where the seal is in contact with food products. It is characterised by a silicone overmoulding on the inside of the seal, which completely hides the V-spring, thus preventing impurities from accumulating in this hard-to-clean area.

ADVANTAGES

Wide temperature range and excellent chemical resistance

Low friction coefficient; no stick-slip effect

Excellent abrasion resistance

Good dimensional stability

Non-toxic material

APPLICATIONS

Food & Beverage

Medical

Pharmaceutical

Static hydraulics

MATERIALS

Profiled seal

Carbon-filled PTFE

Blue GL PTFE

PE-UHMW

V-Shaped spring

Stainless steel

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-200°C / +260°C
Pressure	30 MPa
Speed	15 m/s
Media	Practically all types of fluids, and chemical and gas products

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2			
	2 MPa	10 MPa	20 MPa	30 MPa
1.45	0.20	0.10	0.08	0.05
2.25	0.25	0.15	0.10	0.07
3.10	0.35	0.20	0.15	0.08
4.70	0.50	0.25	0.20	0.10
6.10	0.60	0.30	0.25	0.12
9.50	0.90	0.50	0.40	0.20

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

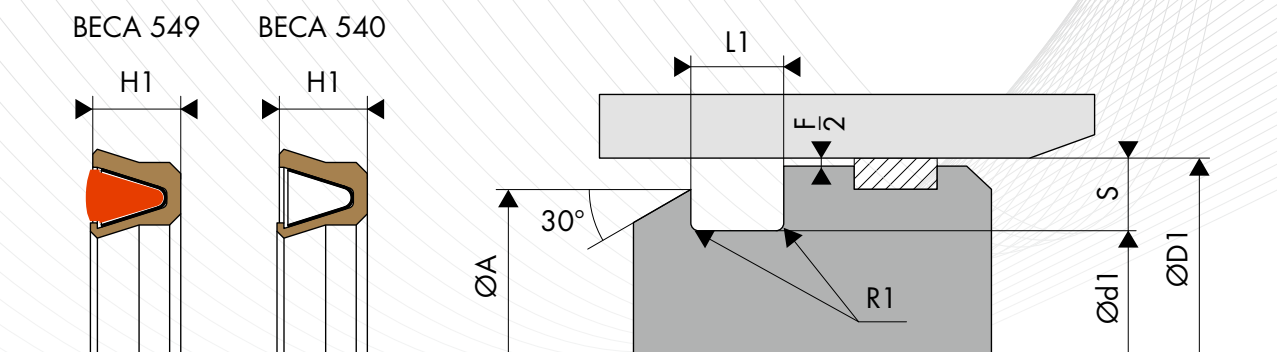
CHAMFERS AND RADIUS

Radial section S	Radius R1	Chamfer C
1.45	0.40	3.00
2.25	0.40	3.00
3.10	0.60	3.00
4.70	0.80	3.00
6.10	0.80	3.50
9.50	0.80	6.50

TABLE MATERIALS

Profiled seal					V-spring			Mating surface material
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature	
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	I	X10 Cr Ni 18-8	-200°C/+260°C	
CG	C	PTFE + 23% Carbon + 2% Graphite	Black		I	X10 Cr Ni 18-8	-200°C/+260°C	
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Chrome steel Cast iron
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey		I	X10 Cr Ni 18-8	-200°C/+260°C	
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	I	X10 Cr Ni 18-8	-200°C/+260°C	
DG	G	PTFE + 15% Graphite	Black	Improvements • Wear properties Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
K1	K	PTFE + 10% Ekonol	Light brown	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures Use up to +300°C Good friction coefficient and low permeability	I	X10 Cr Ni 18-8	-200°C/+260°C	
K2	K	PTFE + 20% Ekonol	Light brown		I	X10 Cr Ni 18-8	-200°C/+260°C	
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Chrome steel Cast iron
B4	B	PTFE + 40% Bronze	Dark brown		I	X10 Cr Ni 18-8	-200°C/+260°C	
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	I	X10 Cr Ni 18-8	-70°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface

Other grades of materials are available depending on your specificities.



○ INSTALLATION DIMENSIONS

Series	Bore diameter ØD1 H9		Groove diameter	Groove width	Radial section	Step height
	Standard range	Extended range	Ød1 h9	L1 0/+0.20	S	ØD1 - A
540.0*	6.0 - 13.9	6.0 - 40.0	D1 - 2.90	2.40	1.45	0.4
540.1	14.0 - 24.9	10.0 - 200.0	D1 - 4.50	3.60	2.25	0.6
540.2	25.0 - 45.9	16.0 - 400.0	D1 - 6.20	4.80	3.10	0.7
540.3	46.0 - 124.9	28.0 - 700.0	D1 - 9.40	7.10	4.70	0.8
540.4	125.0 - 999.9	45.0 - 999.9	D1 - 12.20	9.50	6.10	0.9
540.5	1000.0 - 2500.0	100.0 - 2500.0	D1 - 19.00	15.00	9.50	0.9

For special applications > 30 MPa, we recommend using an H8/f8 tolerance (bore/piston) or selecting other, more suitable materials. Please contact our experts.

*Only BECA 540.0 profiles are fitted with an O'Ring instead of a V-spring.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : PTFE + 25% Carbon profiled seal - Code DC

_____ : Stainless steel V-Shaped spring - Code I

Bore diameter _____ : ØD1 = 50.00 mm

Groove diameter _____ : Ød1 + 40.60 mm

Part number _____ : 540.3050DCI

Part number -

	540.3	050	DC	I
Family				
Bore diameter				
Friction ring material*				
V-Shaped spring material*				

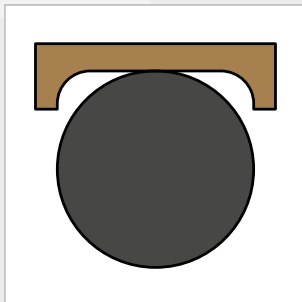
* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.20
540.0008	8.00	5.10	2.10	2.40
540.0010	10.00	7.10	2.10	2.40
540.0012	12.00	9.10	2.10	2.40
540.1014	14.00	9.50	3.30	3.60
540.1015	15.00	10.50	3.30	3.60
540.1016	16.00	11.50	3.30	3.60
540.1017	17.00	12.50	3.30	3.60
540.1018	18.00	13.50	3.30	3.60
540.1020	20.00	15.50	3.30	3.60
540.1022	22.00	17.50	3.30	3.60
540.1024	24.00	19.50	3.30	3.60
540.2025	25.00	18.80	4.40	4.80
540.2026	26.00	19.80	4.40	4.80
540.2028	28.00	21.80	4.40	4.80
540.2030	30.00	23.80	4.40	4.80
540.2032	32.00	25.80	4.40	4.80
540.2035	35.00	28.80	4.40	4.80
540.2384	38.40	32.20	4.40	4.80
540.2040	40.00	33.80	4.40	4.80
540.2042	42.00	35.80	4.40	4.80
540.2045	45.00	38.80	4.40	4.80
540.3046	46.00	36.60	6.50	7.10
540.3048	48.00	38.60	6.50	7.10
540.3049	49.00	39.60	6.50	7.10
540.3050	50.00	40.60	6.50	7.10
540.3052	52.00	42.60	6.50	7.10
540.3053	53.00	43.60	6.50	7.10
540.3055	55.00	45.60	6.50	7.10
540.3056	56.00	46.60	6.50	7.10
540.3058	58.00	48.60	6.50	7.10
540.3060	60.00	50.60	6.50	7.10
540.3061	61.00	51.60	6.50	7.10
540.3063	63.00	53.60	6.50	7.10
540.3064	64.00	54.60	6.50	7.10
540.3065	65.00	55.60	6.50	7.10
540.3067	67.00	57.60	6.50	7.10
540.3068	68.00	58.60	6.50	7.10
540.3070	70.00	60.60	6.50	7.10
540.3072	72.00	62.60	6.50	7.10
540.3074	74.00	64.60	6.50	7.10
540.3075	75.00	65.60	6.50	7.10
540.3078	78.00	68.60	6.50	7.10
540.3080	80.00	70.60	6.50	7.10
540.3083	83.00	73.60	6.50	7.10
540.3085	85.00	75.60	6.50	7.10
540.3086	86.00	76.60	6.50	7.10
540.3090	90.00	80.60	6.50	7.10
540.3092	92.00	82.60	6.50	7.10
540.3095	95.00	85.60	6.50	7.10
540.3098	98.00	88.60	6.50	7.10
540.3100	100.00	90.60	6.50	7.10
540.3105	105.00	95.60	6.50	7.10
540.3108	108.00	98.60	6.50	7.10

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.20
540.3110	110.00	100.60	6.50	7.10
540.3115	115.00	105.60	6.50	7.10
540.3120	120.00	110.60	6.50	7.10
540.4125	125.00	112.80	8.80	9.50
540.4130	130.00	117.80	8.80	9.50
540.4135	135.00	122.80	8.80	9.50
540.4140	140.00	127.80	8.80	9.50
540.4145	145.00	132.80	8.80	9.50
540.4150	150.00	137.80	8.80	9.50
540.4155	155.00	142.80	8.80	9.50
540.4160	160.00	147.80	8.80	9.50
540.4165	165.00	152.80	8.80	9.50
540.4170	170.00	157.80	8.80	9.50
540.4175	175.00	162.80	8.80	9.50
540.4180	180.00	167.80	8.80	9.50
540.4185	185.00	172.80	8.80	9.50
540.4190	190.00	177.80	8.80	9.50
540.4195	195.00	182.80	8.80	9.50
540.4200	200.00	187.80	8.80	9.50
540.4205	205.00	192.80	8.80	9.50
540.4210	210.00	197.80	8.80	9.50
540.4215	215.00	202.80	8.80	9.50
540.4220	220.00	207.80	8.80	9.50
540.4225	225.00	212.80	8.80	9.50
540.4230	230.00	217.80	8.80	9.50
540.4235	235.00	222.80	8.80	9.50
540.4240	240.00	227.80	8.80	9.50
540.4245	245.00	232.80	8.80	9.50
540.4250	250.00	237.80	8.80	9.50
540.4255	255.00	242.80	8.80	9.50
540.4260	260.00	247.80	8.80	9.50
540.4264	264.00	251.80	8.80	9.50
540.4265	265.00	252.80	8.80	9.50
540.4270	270.00	257.80	8.80	9.50
540.4275	275.00	262.80	8.80	9.50
540.4280	280.00	267.80	8.80	9.50
540.4285	285.00	272.80	8.80	9.50
540.4290	290.00	277.80	8.80	9.50
540.4295	295.00	282.80	8.80	9.50
540.4300	300.00	287.80	8.80	9.50
540.4305	305.00	292.80	8.80	9.50
540.4310	310.00	297.80	8.80	9.50
540.4315	315.00	302.80	8.80	9.50
540.4320	320.00	307.80	8.80	9.50
540.4325	325.00	312.80	8.80	9.50
540.4350	350.00	337.80	8.80	9.50
540.4360	360.00	347.80	8.80	9.50
540.4400	400.00	387.80	8.80	9.50
540.4420	420.00	407.80	8.80	9.50
540.4450	450.00	437.80	8.80	9.50
540.4480	480.00	467.80	8.80	9.50
540.4500	500.00	487.80	8.80	9.50

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA

550-559



DESCRIPTION

The BECA 550-559 profiles are double acting composite piston seals composed of a filled PTFE friction ring and pre-tightened rubber O'Ring. They can be mounted in the grooves of the O'Rings. Option of connecting the seal to 1 or 2 back-up rings.

ADVANTAGES

Suitable for a reduced size

Low friction coefficient;
no stick-slip effect

Excellent extrusion and wear resistance

Wide temperature range and excellent chemical resistance, depending on the material selected for the O'Ring

APPLICATIONS

Machine tools

Lifting systems

Valves

MATERIALS

Friction ring

Bronze-filled PTFE

Carbon-filled PTFE

Blue GL PTFE

O'Ring

NBR 70 Shore A

FKM 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	35 MPa
Speed	5 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

Radial section S	Radial gap F/2			
	2 MPa	10 MPa	20 MPa	35 MPa
1.45	0.10	0.10	0.08	0.05
2.25	0.15	0.15	0.10	0.07
3.10	0.25	0.20	0.15	0.08
4.70	0.35	0.25	0.20	0.10
6.10	0.50	0.30	0.25	0.15
7.50	0.60	0.40	0.30	0.20

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

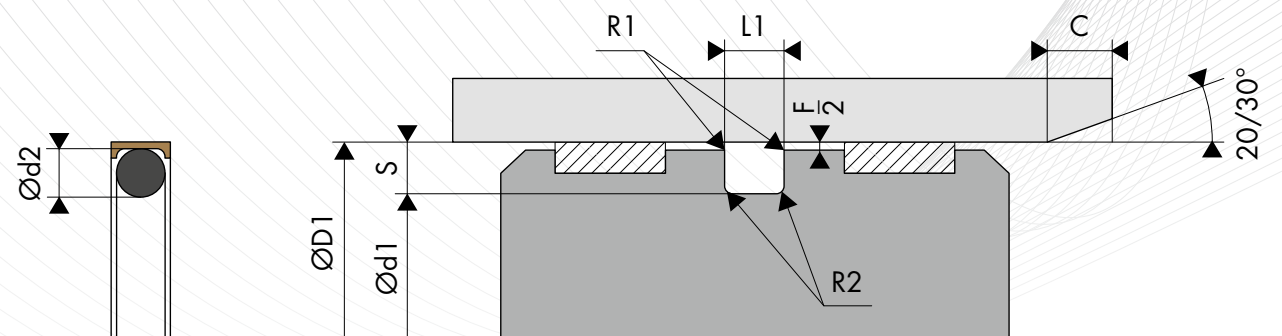
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
1.45	0.30	0.40	2.00
2.25	0.30	0.40	2.00
3.10	0.30	0.60	3.00
4.70	0.30	0.80	3.00
6.10	0.30	0.80	5.00
7.50	0.30	1.00	6.00

TABLE MATERIALS

Friction ring					O'Ring			Mating surface material	
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature		
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
					F6	VMQ 70 Shore A	-60°C/+200°C		
DC	C	PTFE + 25% Carbon	Grey	Improvements • Wear properties • Compression set Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
CG	C	PTFE + 23% Carbon + 2% Graphite	Black		C6	EPDM 70 Shore A	-45°C/+150°C		
					K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DV	V	PTFE + 25 % Glass	Blue	Improvements • Wear properties • Mechanical strength Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron	
					G6	FKM 70 Shore A	-20°C/+200°C		
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey		K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue		K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DG	G	PTFE + 15% Graphite	Black		K6	NBR 70 Shore A	-30°C/+100°C		Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
					G6	FKM 70 Shore A	-20°C/+200°C		
				C6	EPDM 70 Shore A	-45°C/+150°C			
K1	K	PTFE + 10% Ekonol	Light brown	K6	NBR 70 Shore A	-30°C/+100°C			
				G6	FKM 70 Shore A	-20°C/+200°C			
K2	K	PTFE + 20% Ekonol	Light brown	C6	EPDM 70 Shore A	-45°C/+150°C			
				K6	NBR 70 Shore A	-30°C/+100°C			
				G6	FKM 70 Shore A	-20°C/+200°C			
				C6	EPDM 70 Shore A	-45°C/+150°C			
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron	
					G6	FKM 70 Shore A	-20°C/+200°C		
B4	B	PTFE + 40% Bronze	Dark brown		K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	

Other grades of materials are available depending on your specificities.



○ INSTALLATION DIMENSIONS

Bore diameter ØD1 H9		Groove diameter	Groove width	Radial section	O'Ring cross-section
BECA 550 Standard range	BECA 559 Extended range	Ød1 h9	L1 0/+0.20	S	Ød2
5.0 - 13.9	5.0 - 139.9	D1 - 2.90	2.40	1.45	1.78
14.0 - 24.9	8.0 - 259.9	D1 - 4.50	3.60	2.25	2.62
25.0 - 45.9	12.0 - 469.9	D1 - 6.20	4.80	3.10	3.53
46.0 - 124.9	20.0 - 669.9	D1 - 9.40	7.10	4.70	5.33
125.0 - 669.9	80.0 - 999.9	D1 - 12.20	9.50	6.10	6.99
670.0 - 999.9	125.0 - 999.9	D1 - 15.00	10.00	7.50	8.40

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Friction ring, PTFE + 60% Bronze - Code DB
 _____ : NBR 70 Shore A O'Ring - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 40.60 mm
Part number _____ : 550. 050DBK6

Part number - 550. 050 DB K6
 Family _____
 Bore diameter _____
 Friction ring material* _____
 O'Ring material* _____

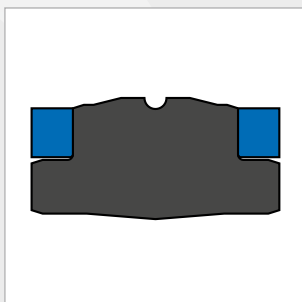
* The codes that define the materials are set out in the materials table on the previous page.

DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
550.008	8.00	5.10	2.40
550.022	22.00	17.50	3.60
550.025	25.00	18.80	4.80
550.028	28.00	21.80	4.80
550.030	30.00	23.80	4.80
550.032	32.00	25.80	4.80
550.035	35.00	28.80	4.80
550.038	38.00	28.60	7.10
550.040	40.00	33.80	4.80
550.042	42.00	35.80	4.80
550.045	45.00	38.80	4.80
550.009	9.00	6.10	2.40
550.048	48.00	38.60	7.10
550.050	50.00	40.60	7.10
550.052	52.00	42.60	7.10
550.055	55.00	45.60	7.10
550.058	58.00	48.60	7.10
550.060	60.00	50.60	7.10
550.062	62.00	52.60	7.10
550.063	63.00	53.60	7.10
550.065	65.00	55.60	7.10
550.070	70.00	60.60	7.10
550.010	10.00	7.10	2.40
550.072	72.00	62.60	7.10
550.075	75.00	65.60	7.10
550.078	78.00	68.60	7.10
550.080	80.00	70.60	7.10
550.082	82.00	72.60	7.10
550.085	85.00	75.60	7.10
550.090	90.00	80.60	7.10
550.095	95.00	85.60	7.10
550.100	100.00	90.60	7.10
550.105	105.00	95.60	7.10
550.012	12.00	9.10	2.40
550.110	110.00	100.60	7.10
550.115	115.00	105.60	7.10
550.120	120.00	110.60	7.10
550.125	125.00	112.80	9.50
550.130	130.00	117.80	9.50
550.135	135.00	122.80	9.50
550.140	140.00	127.80	9.50
550.150	150.00	137.80	9.50
550.155	155.00	142.80	9.50

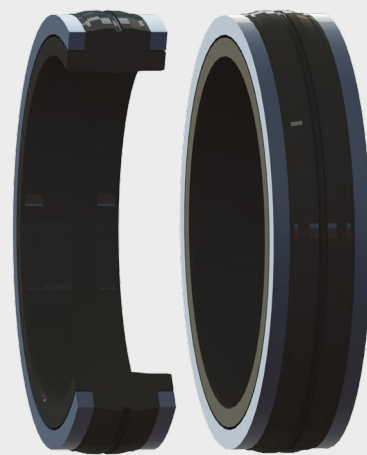
Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
550.014	14.00	9.50	3.60
550.160	160.00	147.80	9.50
550.165	165.00	152.80	9.50
550.170	170.00	157.80	9.50
550.175	175.00	162.80	9.50
550.180	180.00	167.80	9.50
550.190	190.00	177.80	9.50
550.200	200.00	187.80	9.50
550.210	210.00	197.80	9.50
550.220	220.00	207.80	9.50
550.015	15.00	10.50	3.60
550.240	240.00	227.80	9.50
550.250	250.00	237.80	9.50
550.260	260.00	247.80	9.50
550.270	270.00	257.80	9.50
550.280	280.00	267.80	9.50
550.290	290.00	277.80	9.50
550.300	300.00	287.80	9.50
550.320	320.00	307.80	9.50
550.330	330.00	317.80	9.50
550.016	16.00	11.50	3.60
550.340	340.00	327.80	9.50
550.350	350.00	337.80	9.50
550.360	360.00	347.80	9.50
550.370	370.00	357.80	9.50
550.380	380.00	367.80	9.50
550.390	390.00	377.80	9.50
550.410	410.00	397.80	9.50
550.420	420.00	407.80	9.50
550.430	430.00	417.80	9.50
550.018	18.00	13.50	3.60
550.440	440.00	427.80	9.50
550.450	450.00	437.80	9.50
550.460	460.00	447.80	9.50
550.470	470.00	457.80	9.50
550.480	480.00	467.80	9.50
550.490	490.00	477.80	9.50
550.500	500.00	487.80	9.50
550.020	20.00	15.50	3.60
550.145	145.00	132.80	9.50
550.230	230.00	217.80	9.50
550.310	310.00	297.80	9.50
550.400	400.00	387.80	9.50

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 560



DESCRIPTION

The BECA 560 profile is a high-performing, double acting compact piston seal composed of a flexible rubber ring and two POM back-up rings as standard.

ADVANTAGES

Good sealing effect
Excellent extrusion resistance
Excellent wear resistance
Reliable sealing for significant and sudden pressure variations
Assembled by deformation

APPLICATIONS

Agriculture
Mobile machinery
Hydraulic cylinders

MATERIALS

Flexible ring

NBR 80 Shore A
FKM 80 Shore A

Back-up rings

Polyoxymethylene (POM)
Bronze-filled PTFE

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

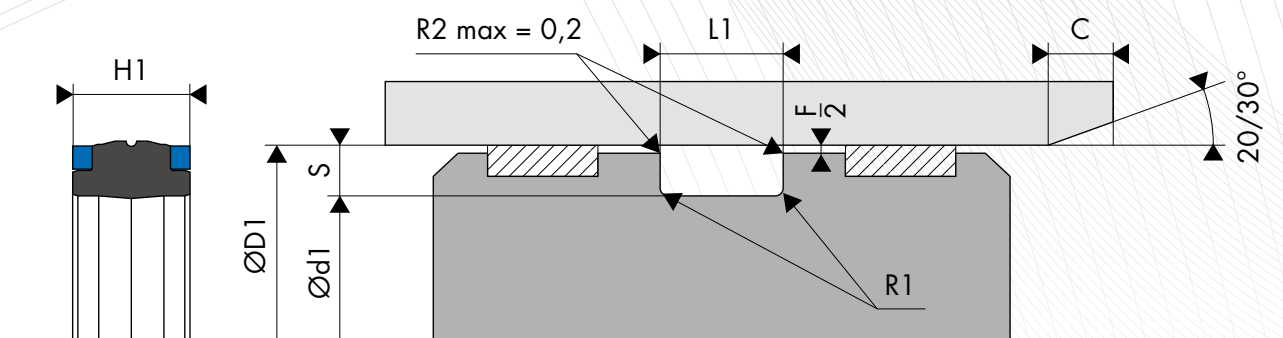
Pressure MPa	Radial gap F/2
25 MPa	0.30
35 MPa	0.20
40 MPa	0.15

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Chamfer C
8.00	0.20	5.00
10.00	0.30	6.00

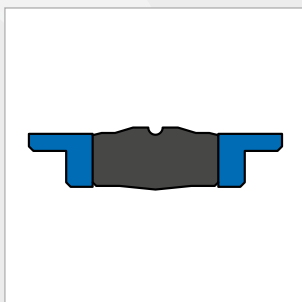


DIMENSIONS

Part number	Bore diameter ØD1 H11	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.20
560.1040AK8	40.00	24.00	18.00	18.40
560.1110AK8	110.00	90.00	22.00	22.40
560.1115AK8	115.00	90.00	22.00	22.30
560.1120AK8	120.00	95.00	22.00	22.40
560.1130AK8	130.00	105.00	25.00	25.30
560.1050AK8	50.00	34.00	18.00	18.40
560.1055AK8	55.00	39.00	18.00	18.40

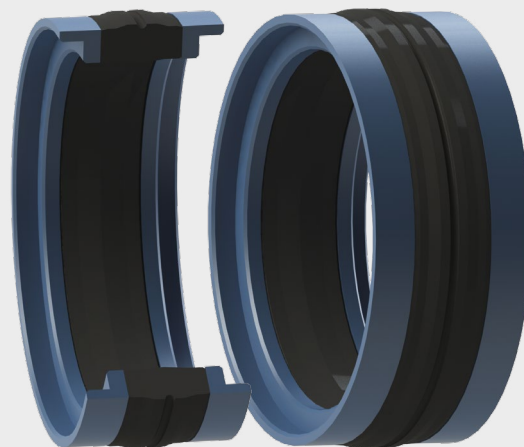
Part number	Bore diameter ØD1 H11	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.20
560.1060AK8	60.00	44.00	18.00	18.40
560.1070AK8	70.00	50.00	22.00	22.40
560.1080AK8	80.00	60.00	22.00	22.40
560.1090AK8	90.00	70.00	22.00	22.40
560.1095AK8	95.00	75.00	22.00	22.30
560.1100AK8	100.00	75.00	22.00	22.40

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 570



DESCRIPTION

The BECA 570 profile is a high-performing, double acting compact piston seal composed of a profiled rubber ring with special fibre reinforcements and a POM wear/back-up ring. It can be assembled in a groove according to standard ISO 6547.

ADVANTAGES

Good sealing effect
Excellent extrusion resistance
Excellent wear resistance
Reliable sealing for significant and sudden pressure variations

APPLICATIONS

Agriculture
Mobile machinery
Hydraulic cylinders

MATERIALS

Profiled seal

Fabric NBR

Wear/back-up rings

Polyoxymethylene - POM

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

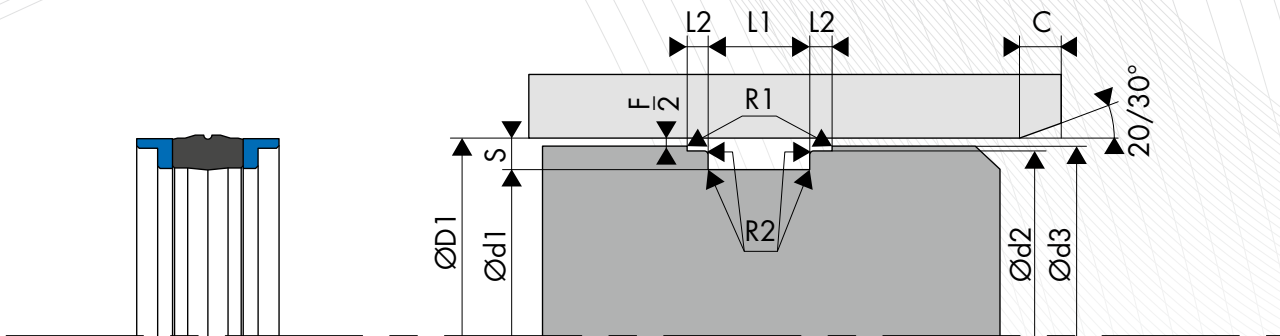
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

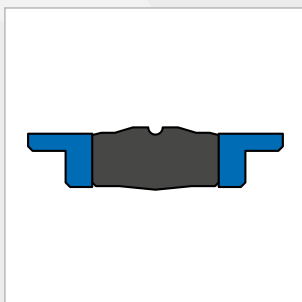
Radial section S	Radius R1	Radius R2	Min. chamfer C
4.00	0.40	0.40	2.50
5.00	0.40	0.40	3.00
6.00	0.40	0.40	3.00
7.50	0.40	0.40	4.00
8.50	0.40	0.40	5.00
10.00	0.80	0.80	6.00
15.00	0.80	0.80	8.00



DIMENSIONS

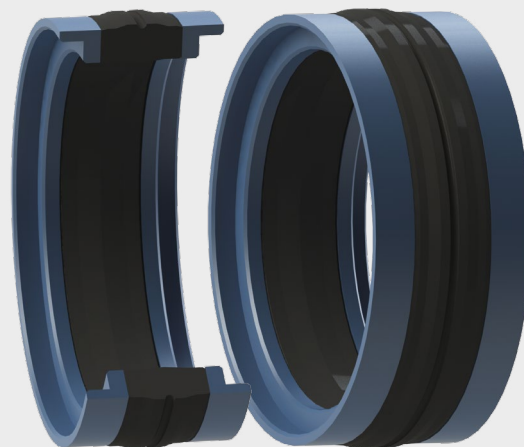
Part number	Bore diameter ØD1 H11	Groove dimensions					
		Ød1 h9	Ød2 h9	Ød3 h11	L1 0/+0.15	L2 0/+0.15	L3 0/+0.10
570.R025AF8	25.00	17.00	21.00	24.40	13.50	3.20	2.10
570.2040AF8	40.00	30.00	35.40	38.40	16.30	6.35	-
570.0040AF8	40.00	32.00	36.00	39.40	15.50	3.20	-
570.R040AF8	40.00	32.00	36.00	39.40	15.50	3.20	3.10
570.3040AF8	40.00	32.00	37.00	39.00	10.00	4.00	-
570.0045AF8	45.00	37.00	41.00	44.40	15.50	3.20	-
570.R045AF8	45.00	37.00	41.00	44.40	15.50	3.20	3.10
570.0050AF8	50.00	38.00	46.00	49.40	20.50	4.20	-
570.3050AF8	50.00	40.00	47.00	49.00	12.50	4.00	-
570.0055AF8	55.00	43.00	51.00	54.40	20.50	4.20	-
570.0060AF8	60.00	48.00	56.00	59.40	20.50	4.20	-
570.3025AF8	25.00	17.00	22.00	24.00	10.00	4.00	-
570.0063AF8	63.00	51.00	59.00	62.40	20.50	4.20	-
570.3063AF8	63.00	53.00	60.00	62.00	12.50	4.00	-
570.0065AF8	65.00	53.00	61.00	64.40	20.50	4.20	-
570.0070AF8	70.00	58.00	66.00	69.40	20.50	4.20	-
570.0075AF8	75.00	63.00	71.00	74.40	20.50	4.20	-
570.3080AF8	80.00	65.00	76.00	78.50	20.00	5.00	-
570.0080AF8	80.00	66.00	76.00	79.40	22.50	5.20	-
570.0085AF8	85.00	71.00	81.00	84.40	22.50	5.20	-
570.0090AF8	90.00	76.00	86.00	89.40	22.50	5.20	-
570.3100AF8	100.00	85.00	96.00	98.50	20.00	5.00	-
570.S030AF8	30.00	21.00	27.00	29.00	13.50	2.10	-
570.0100AF8	100.00	86.00	96.00	99.40	22.50	5.20	-
570.0110AF8	110.00	96.00	106.00	109.40	22.50	5.20	-
570.0120AF8	120.00	106.00	116.00	119.40	22.50	5.20	-
570.3125AF8	125.00	105.00	120.00	123.00	25.00	6.30	-
570.0125AF8	125.00	108.00	121.00	124.40	26.50	7.20	-
570.5130AF8	130.00	105.00	122.60	127.50	25.30	3.50	-
570.3140AF8	140.00	120.00	135.00	138.00	25.00	6.30	-
570.0140AF8	140.00	123.00	136.00	139.40	26.50	7.20	-
570.0150AF8	150.00	133.00	146.00	149.40	26.50	7.20	-
570.5160AF8	160.00	140.00	155.00	158.00	25.00	6.30	-
570.R030AF8	30.00	22.00	26.00	29.40	13.50	3.20	2.10
570.0160AF8	160.00	143.00	156.00	159.40	26.50	7.20	-
570.0170AF8	170.00	153.00	166.00	169.40	26.50	7.20	-
570.3180AF8	180.00	150.00	172.00	178.00	36.00	7.20	-
570.0180AF8	180.00	163.00	176.00	179.40	26.50	7.20	-
570.3200AF8	200.00	170.00	192.00	197.00	36.00	12.50	-
570.0200AF8	200.00	180.00	196.00	199.40	31.50	9.20	-
570.0220AF8	220.00	200.00	216.00	219.40	31.50	9.20	-
570.0250AF8	250.00	230.00	246.00	249.40	31.50	9.20	-
570.0320AF8	320.00	290.00	312.00	317.00	36.00	12.50	-
570.0400AF8	400.00	360.00	392.00	397.00	50.00	16.00	-
570.0030AF8	30.00	22.00	26.00	29.40	13.50	3.20	-
570.0500AF8	500.00	460.00	492.00	497.00	50.00	16.00	-
570.R032AF8	32.00	24.00	28.00	31.40	15.50	3.20	3.10
570.3032AF8	32.00	24.00	29.00	31.00	10.00	4.00	-
570.0035AF8	35.00	27.00	31.00	34.40	15.50	3.20	-
570.R035AF8	35.00	27.00	31.00	34.40	15.50	3.20	3.10

The figures highlighted in bold correspond to the dimensions for standard ISO 6547, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 571



DESCRIPTION

The BECA 571 profile is a high-performing, double acting compact piston seal composed of a soft rubber ring and a POM wear/back-up ring as standard.

ADVANTAGES

Good sealing effect
Excellent extrusion resistance
Excellent wear resistance
Reliable sealing for significant and sudden pressure variations

APPLICATIONS

Agriculture
Mobile machinery
Hydraulic cylinders

MATERIALS

Profiled seal

NBR 80 Shore A
FKM 80 Shore A

Wear/back-up rings

Polyoxymethylene - POM
Bronze-filled PTFE

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

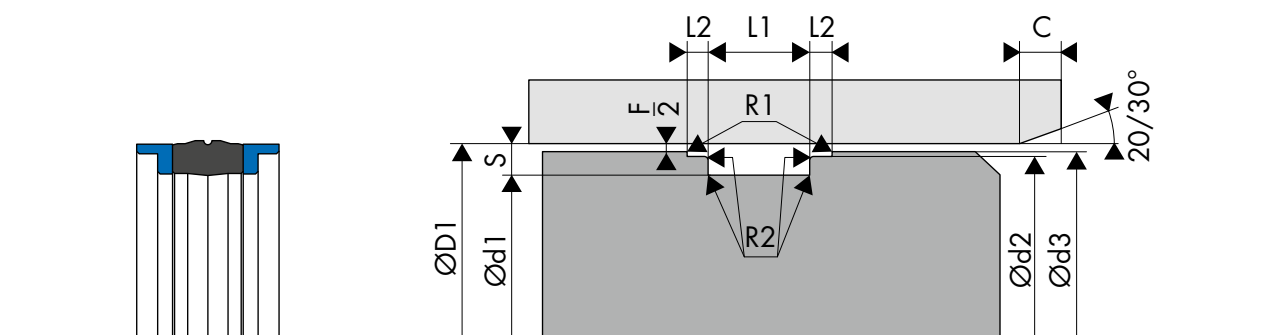
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

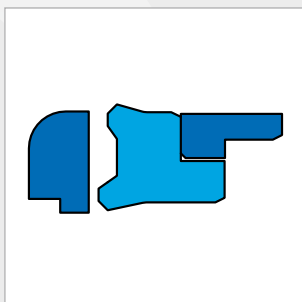
Radial section S	Radius R1	Radius R2	Min. chamfer C
4.00	0.40	0.40	2.50
5.00	0.40	0.40	3.00
6.00	0.40	0.40	3.00
7.50	0.40	0.40	4.00
8.50	0.40	0.40	5.00
10.00	0.80	0.80	6.00
15.00	0.80	0.80	8.00



DIMENSIONS

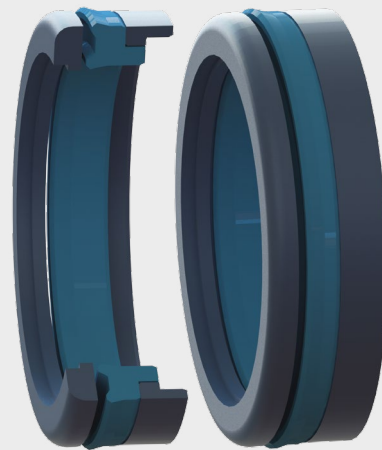
Part number	Bore diameter ØD1 H11	Groove dimensions						
		Ød1 h9	Ød2 h9	Ød3 h11	Ød4 h9	L1 0/+0.15	L2 0/+0.15	L3
571.0035AK8	35.00	27.00	31.00	34.40	-	15.50	3.20	-
571.R035AK8	35.00	27.00	31.00	34.40	24.00	15.50	3.20	3.10
571.0036AK8	36.00	28.00	32.00	35.40	-	15.50	3.20	-
571.1040AK8	40.00	24.00	35.40	38.70	-	18.40	6.35	-
571.5040AK8	40.00	26.00	36.00	39.40	-	15.50	3.20	-
571.2040AK8	40.00	30.00	35.40	38.70	-	16.30	6.35	-
571.0040AK8	40.00	32.00	36.00	39.40	-	15.50	3.20	-
571.R040AK8	40.00	32.00	36.00	39.40	29.00	15.50	3.25	3.10
571.3040AK8	40.00	32.00	37.00	39.00	-	10.00	4.00	-
571.0042AK8	42.00	34.00	38.00	41.40	-	15.50	3.20	-
571.0045AK8	45.00	37.00	41.00	44.40	-	15.50	3.20	-
571.1025AK8	25.00	16.00	20.00	24.40	-	13.50	3.20	-
571.R045AK8	45.00	37.00	41.00	44.40	34.00	15.50	3.20	3.10
571.1050AK8	50.00	34.00	45.40	48.70	-	18.40	6.35	-
571.0050AK8	50.00	38.00	46.00	49.40	-	20.50	4.20	-
571.3050AK8	50.00	40.00	47.00	49.00	-	12.50	4.00	-
571.1055AK8	55.00	39.00	50.40	53.60	-	18.40	6.35	-
571.0055AK8	55.00	43.00	51.00	54.40	-	20.50	4.20	-
571.1060AK8	60.00	44.00	55.40	58.70	-	18.40	6.35	-
571.0060AK8	60.00	48.00	56.00	59.40	-	20.50	4.20	-
571.1063AK8	63.00	47.00	58.40	61.70	-	18.40	6.35	-
571.0063AK8	63.00	51.00	59.00	62.40	-	20.50	4.20	-
571.R025AK8	25.00	17.00	21.00	24.40	14.00	13.50	3.20	2.10
571.3063AK8	63.00	53.00	60.00	62.00	-	12.50	4.00	-
571.0065AK8	65.00	50.00	61.00	64.40	-	18.30	4.20	-
571.1070AK8	70.00	50.00	64.20	68.30	-	22.40	6.35	-
571.0070AK8	70.00	58.00	66.00	69.40	-	20.50	4.20	-
571.1075AK8	75.00	55.00	69.20	73.30	-	22.40	6.35	-
571.0075AK8	75.00	63.00	71.00	74.40	-	20.50	4.20	-
571.1080AK8	80.00	60.00	74.20	78.30	-	22.40	6.35	-
571.3080AK8	80.00	65.00	76.00	78.50	-	20.00	5.00	-
571.0080AK8	80.00	66.00	76.00	79.40	-	22.50	5.20	-
571.1085AK8	85.00	65.00	79.20	83.30	-	22.40	6.35	-
571.3025AK8	25.00	17.00	22.00	24.00	-	10.00	4.00	-
571.0085AK8	85.00	71.00	81.00	84.40	-	22.50	5.20	-
571.1090AK8	90.00	70.00	84.20	88.30	-	22.40	6.35	-
571.0090AK8	90.00	76.00	86.00	89.40	-	22.50	5.20	-
571.1095AK8	95.00	75.00	89.20	93.30	-	22.40	6.35	-
571.1100AK8	100.00	75.00	93.20	98.00	-	22.40	6.35	-
571.3100AK8	100.00	85.00	96.00	98.50	-	20.00	5.00	-
571.0100AK8	100.00	86.00	96.00	99.40	-	22.50	5.20	-
571.2100AK8	100.00	87.00	93.80	98.50	-	14.00	6.00	-
571.2110AK8	110.00	90.00	104.10	108.30	-	22.50	6.35	-
571.1110AK8	110.00	90.00	104.10	108.30	-	25.30	6.35	-
571.R030AK8	30.00	22.00	26.00	29.40	19.00	13.50	3.20	2.10
571.0110AK8	110.00	96.00	106.00	109.40	-	22.50	5.20	-
571.0115AK8	115.00	90.00	111.00	114.40	-	22.40	5.20	-
571.0120AK8	120.00	106.00	116.00	119.40	-	22.50	5.20	-
571.3125AK8	125.00	105.00	120.00	123.00	-	25.00	6.30	-
571.0125AK8	125.00	108.00	121.00	124.40	-	26.50	7.20	-
571.5130AK8	130.00	105.00	122.60	127.50	-	25.30	9.50	-
571.3140AK8	140.00	120.00	135.00	138.00	-	25.00	6.30	-
571.0140AK8	140.00	123.00	136.00	139.40	-	26.50	7.20	-
571.0150AK8	150.00	133.00	148.00	149.40	-	26.50	7.20	-
571.0160AF8	160.00	143.00	156.00	159.40	-	26.50	7.20	-
571.1032AK8	32.00	22.00	26.00	31.40	-	15.50	3.20	-
571.0160AK8	160.00	143.00	156.00	159.40	-	26.50	7.20	-
571.0170AK8	170.00	153.00	166.00	169.40	-	26.50	7.20	-
571.3180AK8	180.00	150.00	172.00	178.00	-	36.00	12.50	-
571.0180AK8	180.00	163.00	176.00	179.50	-	26.50	7.20	-
571.0200AK8	200.00	180.00	196.00	199.40	-	31.50	9.20	-
571.0220AK8	220.00	200.00	216.00	219.40	-	31.50	9.20	-
571.0250AK8	250.00	230.00	246.00	249.40	-	31.50	9.20	-
571.R032AK8	32.00	24.00	28.00	31.40	21.00	15.50	3.20	3.10
571.3032AK8	32.00	24.00	29.00	31.00	-	10.00	4.00	-
571.5035AK8	35.00	25.00	29.00	34.40	-	15.50	3.20	-

The figures highlighted in bold correspond to the dimensions for standard ISO 6547, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 572



DESCRIPTION

The BECA 572 profile is a high-performing, single acting compact piston seal composed of a stop joint, POM wear/back-up ring and profiled polyurethane seal.

ADVANTAGES

Excellent wear resistance
Excellent extrusion resistance
Excellent resistance to high pressures

APPLICATIONS

Agriculture
Mobile machinery
Hydraulic cylinders

MATERIALS

Profiled seal

PU 93 Shore A - Blue
PU 96 Shore A - Blue
High temp. PU 96 Shore A - Beige

Wear/back-up rings

Polyoxymethylene - POM

Retaining ring

Polyoxymethylene - POM

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

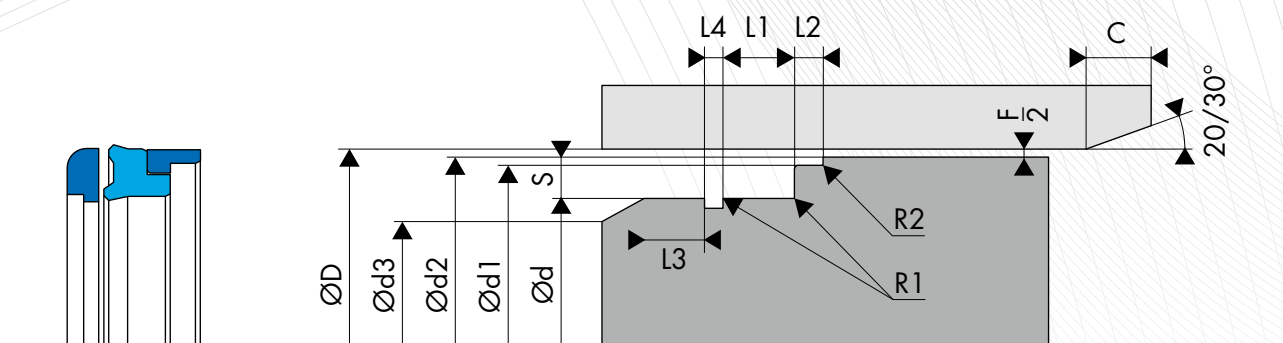
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

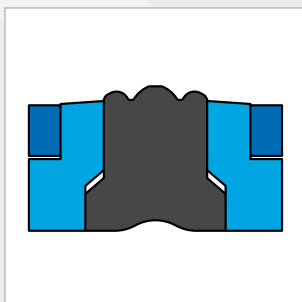
Radial section S	Radius R1	Radius R2	Chamfer C
6.00	0.20	0.20	3.00
7.50	0.20	0.20	4.00
10.00	0.30	0.30	5.00



DIMENSIONS

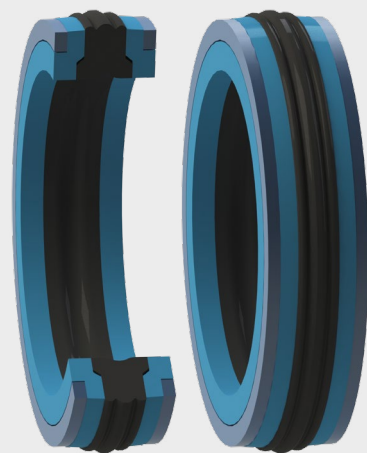
Part number	Bore diameter ØD1 H11	Groove dimensions							
		Ød ±0.15	Ød1 -0.10/0	Ød2 ±0.15	Ød3 -0.25/0	L1 ±0.10	L2 ±0.15	L3	L4 +0.10/+0.20
572.0032AP9	32.00	20.00	28.00	31.00	-	10.00	6.40	-	-
572.0090AP9	90.00	70.00	84.20	88.30	65.60	14.50	6.40	6.50	3.30
572.0100AP9	100.00	80.00	93.20	98.30	75.60	14.50	6.40	6.50	3.30
572.0105AP9	105.00	85.00	98.20	103.30	80.60	14.50	6.40	6.50	3.30
572.0035AP9	35.00	23.00	31.00	34.00	-	10.00	6.40	-	-
572.0040AP9	40.00	28.00	35.40	38.70	23.60	10.00	6.40	6.00	3.10
572.0050AP9	50.00	30.00	44.20	48.30	25.60	14.50	6.40	6.50	3.30
572.0060AP9	60.00	40.00	54.20	58.30	35.60	14.50	6.40	6.50	3.30
572.0063AP9	63.00	48.00	57.20	61.30	38.60	11.00	6.40	-	-
572.0065AP9	65.00	45.00	59.20	63.30	40.60	14.50	6.40	6.50	3.30
572.0070AP9	70.00	50.00	64.20	68.30	45.60	14.50	6.40	6.50	3.30
572.0080AP9	80.00	60.00	74.20	78.30	55.60	14.50	6.40	6.50	3.30

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 579



DESCRIPTION

The BECA 579 profile is a high-performing, double acting compact piston seal composed of a flexible rubber ring, two polyurethane back-up rings and two POM wear rings.

ADVANTAGES

Good sealing effect
Excellent extrusion resistance
Excellent wear resistance
Reliable sealing for significant and sudden pressure variations
Assembly in closed groove, reduced machining costs

APPLICATIONS

Agriculture
Mobile machinery
Hydraulic cylinders

MATERIALS

Profiled seal

NBR 80 Shore A

Back-up rings

Polyurethane 97 Shore A

Wear rings

Polyoxymethylene - POM

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	50 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

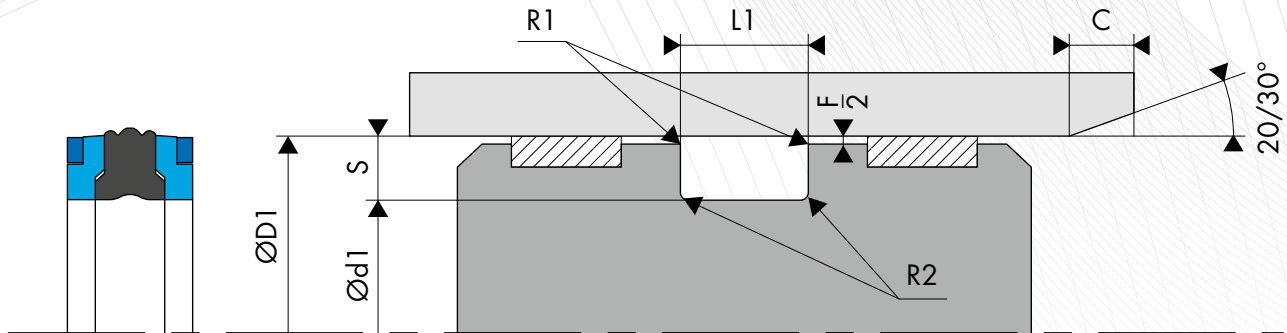
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
4.00	0.40	0.40	2.50
5.00	0.40	0.40	3.00
6.00	0.40	0.40	3.00
7.50	0.40	0.40	4.00
8.50	0.40	0.40	5.00
10.00	0.80	0.80	6.00
15.00	0.80	0.80	8.00

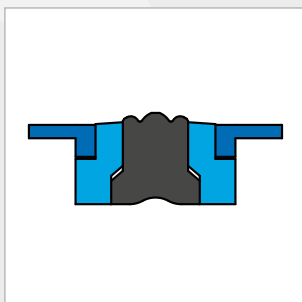


DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
579.0020AK8	20.00	11.00	13.50
579.0032AK8	32.00	22.00	15.50
579.1032AK8	32.00	22.00	16.40
579.0035AK8	35.00	25.00	15.50
579.1035AK8	35.00	25.00	16.40
579.0040AK8	40.00	24.00	18.40
579.4040AK8	40.00	26.00	15.50
579.2040AK8	40.00	30.00	12.50
579.3040AK8	40.00	30.00	12.50
579.1040AK8	40.00	30.00	16.40
579.0042AK8	42.00	28.00	15.50
579.0022AK8	22.00	13.00	13.50
579.0045AK8	45.00	29.00	18.40
579.1045AK8	45.00	31.00	15.50
579.2045AK8	45.00	35.00	16.40
579.0050AK8	50.00	34.00	18.40
579.1050AK8	50.00	34.00	20.50
579.0055AK8	55.00	39.00	18.40
579.1055AK8	55.00	39.00	20.50
579.0056AK8	56.00	40.00	20.50
579.0060AK8	60.00	44.00	18.40
579.1060AK8	60.00	44.00	20.50
579.0025AK8	25.00	15.00	12.00
579.0063AK8	63.00	47.00	18.40
579.1063AK8	63.00	47.00	19.40
579.2063AK8	63.00	47.00	20.50
579.0065AK8	65.00	49.00	20.50
579.1065AK8	65.00	50.00	18.40
579.0070AK8	70.00	50.00	22.40
579.1070AK8	70.00	54.00	20.50
579.0075AK8	75.00	55.00	22.40
579.1075AK8	75.00	59.00	20.50
579.0080AK8	80.00	60.00	22.40
579.2025AK8	25.00	15.00	12.50
579.1080AK8	80.00	62.00	22.50
579.0085AK8	85.00	65.00	22.40
579.0090AK8	90.00	70.00	22.40
579.1090AK8	90.00	72.00	22.50
579.0095AK8	95.00	75.00	22.40
579.0100AK8	100.00	75.00	22.40
579.1100AK8	100.00	82.00	22.50
579.0105AK8	105.00	80.00	22.40
579.0110AK8	110.00	85.00	22.40
579.1110AK8	110.00	92.00	22.50
579.1025AK8	25.00	15.00	16.40
579.0115AK8	115.00	90.00	22.40

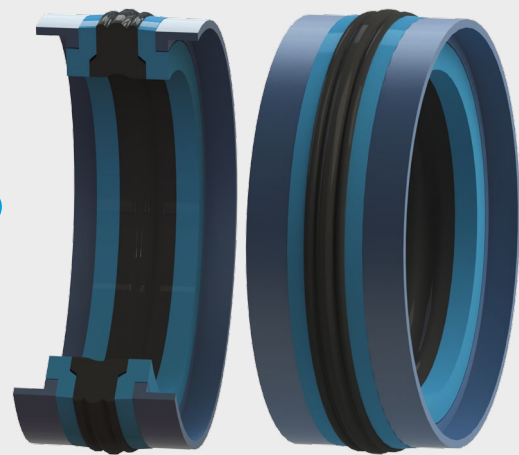
Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
579.1115AK8	115.00	97.00	22.50
579.0120AK8	120.00	95.00	22.40
579.0125AK8	125.00	100.00	25.40
579.1125AK8	125.00	103.00	26.50
579.0130AK8	130.00	105.00	25.40
579.1130AK8	130.00	105.00	25.40
579.0133AK8	133.00	115.00	22.40
579.0135AK8	135.00	110.00	25.40
579.1135AK8	135.00	110.00	25.40
579.3025AK8	25.00	16.00	13.50
579.0140AK8	140.00	115.00	25.40
579.1140AK8	140.00	115.00	25.40
579.2140AK8	140.00	118.00	26.50
579.0145AK8	145.00	120.00	25.40
579.1145AK8	145.00	120.00	25.40
579.0150AK8	150.00	125.00	25.40
579.1150AK8	150.00	128.00	26.50
579.0152AK8	152.40	127.00	31.75
579.0155AK8	155.00	130.00	25.40
579.1155AK8	155.00	130.00	25.40
579.0028AK8	28.00	19.00	13.50
579.0160AK8	160.00	130.00	25.40
579.1160AK8	160.00	130.00	25.40
579.2160AK8	160.00	135.00	25.40
579.3160AK8	160.00	138.00	26.50
579.0165AK8	165.00	140.00	25.40
579.0170AK8	170.00	145.00	25.40
579.1170AK8	170.00	148.00	26.50
579.0175AK8	175.00	150.00	25.40
579.0180AK8	180.00	150.00	35.40
579.1180AK8	180.00	155.00	25.40
579.0030AK8	30.00	17.00	15.40
579.0185AK8	185.00	160.00	25.40
579.0190AK8	190.00	165.00	25.40
579.0195AK8	195.00	170.00	25.40
579.0200AK8	200.00	175.00	25.40
579.1200AK8	200.00	175.00	31.50
579.0210AK8	210.00	185.00	25.40
579.0220AK8	220.00	190.00	35.40
579.1220AK8	220.00	195.00	25.40
579.0230AK8	230.00	205.00	25.40
579.0240AK8	240.00	215.00	25.40
579.1030AK8	30.00	21.00	13.50
579.0250AK8	250.00	220.00	35.40
579.1250AK8	250.00	225.00	25.40

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 579S



DESCRIPTION

The BECA 579S profile is a high-performing, double acting compact piston seal composed of a flexible rubber ring, two polyurethane back-up rings and two L-shaped POM wear rings.

ADVANTAGES

- Good sealing effect
- Excellent extrusion resistance
- Excellent wear resistance
- Reliable sealing for significant and sudden pressure variations
- Assembly in closed groove, reduced machining costs
- Economic wear and sealing solution

APPLICATIONS

- Agriculture
- Mobile machinery
- Hydraulic cylinders

MATERIALS

Profiled seal

NBR 80 Shore A

Back-up rings

Polyurethane 97 Shore A

Wear rings

Polyoxymethylene - POM

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	50 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

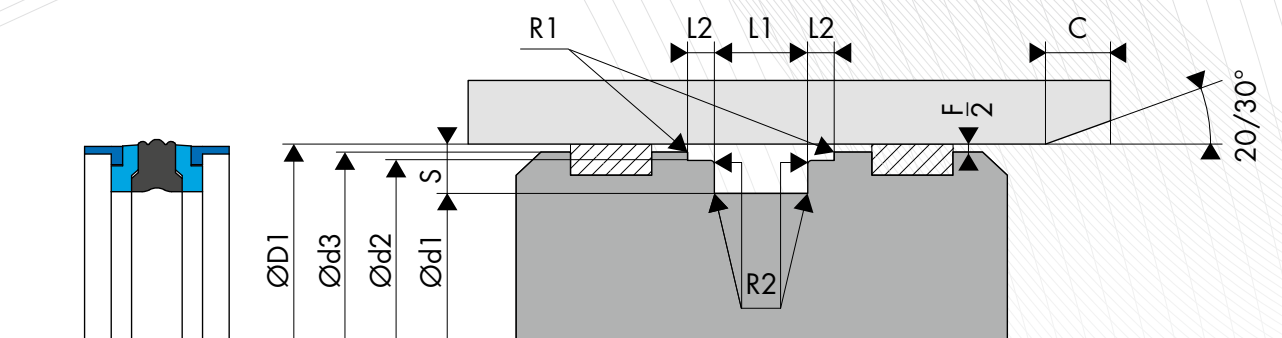
The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
4.00	0.40	0.40	2.50
5.00	0.40	0.40	3.00
6.00	0.40	0.40	3.00
7.50	0.40	0.40	4.00
8.50	0.40	0.40	5.00
10.00	0.80	0.80	6.00
15.00	0.80	0.80	8.00



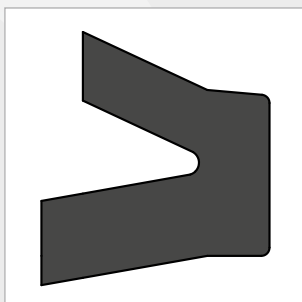
DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove dimensions				
		Ød1 h9	Ød2 h9	Ød3 h11	L1 0/+0.20	L2 0/+0.10
579.0020BK8	20.00	11.00	17.00	19.00	13.50	2.10
579.0032BK8	32.00	22.00	28.00	31.00	15.50	2.60
579.1032BK8	32.00	22.00	28.50	30.50	16.40	6.35
579.0035BK8	35.00	25.00	31.00	34.00	15.50	2.60
579.1035BK8	35.00	25.00	31.40	33.50	16.40	6.35
579.0040BK8	40.00	26.00	36.00	39.00	15.50	2.60
579.2040BK8	40.00	30.00	36.00	38.00	12.50	4.00
579.3040BK8	40.00	30.00	37.00	39.00	12.50	4.00
579.1040BK8	40.00	30.00	35.40	38.50	16.40	6.35
579.0042BK8	42.00	28.00	38.00	41.00	15.50	2.60
579.0045BK8	45.00	29.00	40.40	43.50	18.40	6.35
579.0022BK8	22.00	13.00	19.00	21.00	13.50	2.10
579.1045BK8	45.00	31.00	41.00	44.00	15.50	2.60
579.2045BK8	45.00	35.00	40.40	43.50	16.40	6.35
579.0050BK8	50.00	34.00	45.40	48.50	18.40	6.35
579.1050BK8	50.00	34.00	46.00	49.00	20.50	3.10
579.0055BK8	55.00	39.00	50.36	53.50	18.40	6.35
579.1055BK8	55.00	39.00	51.00	54.00	20.50	3.10
579.0056BK8	56.00	40.00	52.00	55.00	20.50	3.10
579.0060BK8	60.00	44.00	55.40	58.50	18.40	6.35
579.1060BK8	60.00	44.00	56.00	59.00	20.50	3.10
579.0063BK8	63.00	47.00	58.40	61.50	18.40	6.35
579.0025BK8	25.00	15.00	21.00	23.00	12.00	4.00
579.3063BK8	63.00	47.00	58.40	61.50	19.40	6.35
579.4063BK8	63.00	47.00	59.00	62.00	20.50	3.10
579.0065BK8	65.00	49.00	61.00	64.00	20.50	3.10
579.1065BK8	65.00	50.00	60.40	63.50	18.40	6.35
579.0070BK8	70.00	50.00	64.20	68.30	22.40	6.35
579.1070BK8	70.00	54.00	66.00	69.00	20.50	3.10
579.0075BK8	75.00	55.00	69.20	73.30	22.40	6.35
579.1075BK8	75.00	59.00	71.00	74.00	20.50	3.10
579.0080BK8	80.00	60.00	74.15	78.30	22.40	6.35
579.1080BK8	80.00	62.00	76.00	79.00	22.50	3.60

Part number	Bore diameter ØD1 H9	Groove dimensions				
		Ød1 h9	Ød2 h9	Ød3 h11	L1 0/+0.20	L2 0/+0.10
579.2025BK8	25.00	15.00	22.00	24.00	12.50	4.00
579.0085BK8	85.00	65.00	79.15	83.30	22.40	6.35
579.0090BK8	90.00	70.00	84.15	88.30	22.40	6.35
579.1090BK8	90.00	72.00	86.00	89.00	22.50	3.60
579.0095BK8	95.00	75.00	89.15	93.30	22.40	6.35
579.0100BK8	100.00	75.00	93.15	98.00	22.40	6.35
579.1100BK8	100.00	82.00	96.00	99.00	22.50	3.60
579.0105BK8	105.00	80.00	98.10	103.00	22.40	6.35
579.0110BK8	110.00	85.00	103.10	108.00	22.40	6.35
579.1110BK8	110.00	92.00	106.00	109.00	22.50	3.60
579.0115BK8	115.00	90.00	108.10	113.00	22.40	6.35
579.1025BK8	25.00	15.00	21.45	23.50	16.40	6.35
579.1115BK8	115.00	97.00	111.00	114.00	22.50	3.60
579.0120BK8	120.00	95.00	113.10	118.10	22.40	6.35
579.0125BK8	125.00	100.00	118.10	123.00	25.40	6.35
579.1125BK8	125.00	103.00	121.00	124.00	26.50	5.10
579.0130BK8	130.00	105.00	122.60	127.50	25.40	9.50
579.1130BK8	130.00	105.00	123.10	128.00	25.40	6.35
579.0133BK8	133.00	115.00	125.60	130.50	22.40	9.52
579.0135BK8	135.00	110.00	127.60	132.50	25.40	9.50
579.1135BK8	135.00	110.00	128.10	133.00	25.40	6.35
579.0140BK8	140.00	115.00	132.60	137.50	25.40	9.50
579.3025BK8	25.00	16.00	22.00	24.00	13.50	2.10
579.1140BK8	140.00	115.00	133.00	138.00	25.40	6.35
579.2140BK8	140.00	118.00	136.00	139.00	26.50	5.10
579.0145BK8	145.00	120.00	137.60	142.50	25.40	9.50
579.1145BK8	145.00	120.00	138.30	142.95	25.40	6.35
579.2150BK8	150.00	125.00	142.60	147.50	25.40	9.50
579.1150BK8	150.00	125.00	143.00	148.00	25.40	6.35
579.0150BK8	150.00	128.00	146.00	149.00	26.50	5.10
579.0152BK8	152.40	127.00	145.00	149.91	31.75	9.50
579.0155BK8	155.00	130.00	147.60	152.50	25.40	9.50
579.1155BK8	155.00	130.00	148.00	153.00	25.40	6.35
579.0028BK8	28.00	19.00	25.00	27.00	13.50	2.10
579.0160BK8	160.00	130.00	152.60	157.50	25.40	9.50
579.1160BK8	160.00	130.00	153.00	157.50	25.40	6.35
579.2160BK8	160.00	135.00	152.60	157.50	25.40	9.50
579.3160BK8	160.00	138.00	156.00	159.00	26.50	5.10
579.0165BK8	165.00	140.00	157.60	162.50	25.40	9.50
579.0170BK8	170.00	145.00	161.70	167.10	25.40	12.70
579.1170BK8	170.00	148.00	166.00	169.00	26.50	5.10
579.0175BK8	175.00	150.00	166.70	172.10	25.40	12.70
579.0180BK8	180.00	150.00	172.95	177.87	35.40	6.35
579.1180BK8	180.00	155.00	171.70	177.10	25.40	12.70
579.0030BK8	30.00	17.00	26.50	28.50	15.40	6.35
579.0185BK8	185.00	160.00	176.70	182.10	25.40	12.70
579.0190BK8	190.00	165.00	181.70	187.00	25.40	12.70
579.0195BK8	195.00	170.00	186.70	192.00	25.40	12.70
579.0200BK8	200.00	175.00	191.60	197.00	25.40	12.70

Part number	Bore diameter ØD1 H9	Groove dimensions				
		Ød1 h9	Ød2 h9	Ød3 h11	L1 0/+0.20	L2 0/+0.10
579.1200BK8	200.00	175.00	196.00	199.00	31.50	6.60
579.0210BK8	210.00	185.00	201.60	207.00	25.40	12.70
579.0220BK8	220.00	190.00	212.70	217.90	35.40	6.35
579.1220BK8	220.00	195.00	211.60	217.00	25.40	12.70
579.0230BK8	230.00	205.00	221.60	227.00	25.40	12.70
579.0240BK8	240.00	215.00	231.60	237.00	25.40	12.70
579.1030BK8	30.00	21.00	27.00	29.00	13.50	2.10
579.0250BK8	250.00	220.00	242.90	247.85	35.40	6.35

The figures highlighted in bold correspond to the dimensions for standard ISO 6547, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA

580-581



DESCRIPTION

The BECA 580 - 581 profiles are U-ring type piston seals with offset rubber lips.

ADVANTAGES

Very good sealing at low pressures
Excellent wear resistance
Wide temperature range, depending on the material chosen
Reduced size
Closed groove assembly

APPLICATIONS

Material handling - Lifting
Presses
Hydraulic cylinders

MATERIALS

NBR 75 Shore A
NBR 80 Shore A
FKM 80 Shore A

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	8 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

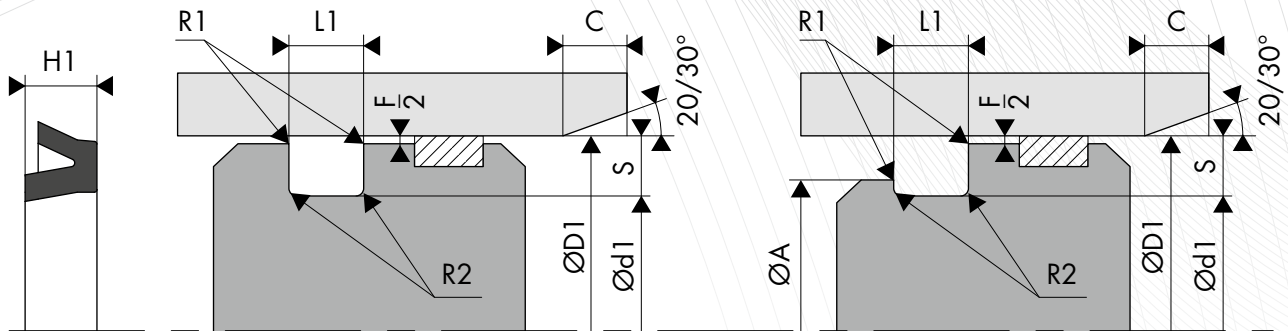
Pressure MPa	Radial gap F/2
1.0 MPa	0.25
1.5 MPa	0.20
6.5 MPa	0.10
8.0 MPa	0.05

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.00	0.30	0.50	2.00
4.00	0.30	0.50	2.00
5.00	0.40	0.60	2.50
6.00	0.50	0.70	3.00
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00



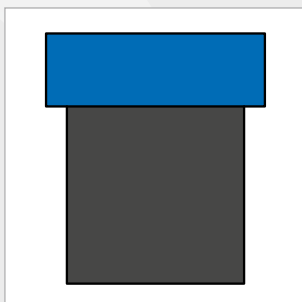
DIMENSIONS

Part number	Bore diameter ØD1 H10	Groove diameter Ød1 f9	Seal height H1	Groove width L1 0/+0.25
580.1016008	16.00	8.10	5.55	7.00
580.1016010	16.00	10.00	4.00	5.50
580.1017012	17.50	12.60	3.17	5.00
580.1134121	134.00	121.30	9.52	11.00
580.1140125	140.00	25.00	10.00	11.50
580.1140127	140.00	127.30	9.52	11.00
580.1145130	145.00	130.00	10.00	11.50
580.1146120	146.00	120.60	15.90	19.00
580.1149136	149.00	136.30	9.52	11.00
580.1153127	153.00	127.60	15.90	19.00
580.1159133	159.00	133.60	15.90	19.00
580.1165139	165.00	139.60	15.90	19.00
580.1171146	171.45	146.05	15.87	17.45
580.1019012	19.00	12.70	3.17	5.00
580.1172153	172.00	153.00	11.10	12.50
580.1180160	180.00	160.00	14.00	17.00
580.1184165	184.00	165.00	11.11	12.50
580.1191159	191.00	159.30	19.00	22.00
580.1197165	197.00	165.30	19.00	22.00
580.1204172	204.00	172.30	19.00	22.00
580.1210178	210.00	178.30	19.00	22.00
580.1019009	19.05	9.52	6.35	7.14
580.1216184	216.00	184.30	19.00	22.00
580.1220200	220.00	200.00	14.00	17.00
580.1222190	222.25	190.50	19.05	20.62
580.1223201	223.00	201.30	12.70	14.50
580.1228196	228.60	196.85	19.05	20.62
580.1229210	229.00	210.00	12.70	14.50
580.1235203	235.00	203.30	19.00	22.00
580.1242210	242.00	210.30	19.00	22.00
580.1248216	248.00	216.30	19.00	22.00
580.1250230	250.00	230.00	14.00	17.00
580.0200107	20.00	10.00	7.00	8.50
580.1253234	253.00	234.00	12.70	14.50
580.1254222	254.00	222.25	19.05	20.62
580.1254235	254.00	235.00	12.70	14.50
580.1261229	261.00	229.30	19.00	22.00
580.1266234	266.70	234.95	19.05	20.62
580.1274242	274.00	242.30	19.00	22.00
580.1280248	280.00	248.30	19.00	22.00
580.1286254	286.00	254.30	19.00	22.00
580.1292260	292.00	260.30	19.00	22.00
580.1020012	20.00	12.00	5.50	7.00
580.1299267	299.00	267.30	19.00	22.00
580.1300268	300.40	268.50	19.00	20.90

Part number	Bore diameter ØD1 H10	Groove diameter Ød1 f9	Seal height H1	Groove width L1 0/+0.25
580.1304273	304.80	273.05	19.05	20.62
580.1305279	305.00	279.60	12.70	14.00
580.1330311	330.00	311.00	12.70	14.50
580.1343323	343.00	323.00	12.70	14.50
580.1356335	356.00	335.50	12.70	14.50
580.1020014	20.00	14.00	4.00	5.50
580.1020011	20.62	11.10	6.35	7.14
580.1004008	8.00	4.00	2.80	3.50
580.1022012	22.00	12.50	6.35	8.00
580.0250174	25.00	17.00	4.50	4.80
580.1025018	25.00	18.00	4.00	5.50
580.1026016	26.00	16.50	6.35	8.00
580.009SPK8	9.00	3.00	6.20	6.90
580.1028015	28.57	15.87	7.92	9.52
580.1030020	30.00	20.50	6.20	8.00
580.4030024	30.00	24.00	4.00	5.00
580.1031019	31.75	19.05	7.92	9.52
580.0320229	32.00	22.20	9.00	9.40
580.1033020	33.32	20.62	7.92	9.52
580.1009003	9.50	3.17	3.96	5.50
580.1034015	34.00	15.00	9.52	11.00
580.1034022	34.92	22.22	7.92	9.52
580.1036023	36.50	23.80	7.92	9.52
580.1037026	37.00	26.00	6.35	8.00
580.1038025	38.10	25.40	7.92	9.52
580.1040030	40.00	30.00	7.00	8.50
580.1011004	11.10	4.76	3.96	5.50
580.1041025	41.27	25.40	9.52	11.10
580.1013006	13.00	6.70	4.76	6.30
580.1063047	63.50	47.62	9.52	11.10
580.1014007	14.00	7.70	4.76	6.30
580.1002006	6.00	2.00	2.80	3.50
580.1095076	95.00	76.70	7.40	9.00
580.2095076	95.25	76.20	12.70	14.30
580.1099086	99.00	86.30	9.52	11.00
580.1100088	100.00	88.00	8.50	10.00
580.1101082	101.60	82.55	12.70	14.30
580.1020891	102.00	89.30	9.00	10.00
580.1102089	102.00	89.30	9.52	11.00
580.1105089	105.00	89.10	7.93	9.50
580.1105093	105.00	93.00	8.50	10.00
580.1107088	107.95	88.90	12.70	14.30
580.1108095	108.00	95.30	7.90	9.50
580.1110098	110.00	98.00	8.50	10.00
580.1111094	111.00	94.70	7.93	9.50
580.1115089	115.00	89.60	15.90	19.00
580.1150951	115.00	95.00	10.00	11.50
580.1118105	118.00	105.30	9.52	11.00
580.1120105	120.00	105.00	10.00	11.00
580.1120095	120.65	95.25	15.87	17.45
580.1121108	121.00	108.30	9.52	11.00
580.1124111	124.00	111.30	9.52	11.00
580.F125110	125.00	110.00	10.00	11.00
580.1127101	127.00	101.60	15.87	17.45
580.1127108	127.00	108.00	9.52	11.00
580.1130117	130.00	117.30	9.52	11.00
580.1133107	133.35	107.95	15.87	17.45
580.1137124	137.00	124.30	9.52	11.00
580.1139114	139.70	114.30	15.87	17.45
580.1431893	18.90	14.30	3.50	5.00
580.1143130	143.00	130.30	9.52	11.00
580.1150135	150.00	135.00	10.00	11.00
580.1160145	160.00	145.00	10.00	11.00
580.1178152	178.00	152.60	15.90	19.00
580.1184152	184.15	152.40	19.05	20.62
580.1200180	200.00	180.00	14.00	17.00

Part number	Bore diameter ØD1 H10	Groove diameter Ød1 f9	Seal height H1	Groove width L1 0/+0.25
580.1267248	267.00	248.00	12.70	14.50
580.1021014	21.00	14.70	6.35	8.00
580.FJ02214	22.00	14.00	6.00	7.00
580.1024014	24.00	14.50	6.35	8.00
580.1017024	24.70	17.00	5.00	5.50
580.1025017	25.00	17.00	5.50	7.00
580.1027017	27.00	17.50	6.35	8.00
580.1029019	29.00	19.05	6.35	8.00
580.1030017	30.15	17.45	7.92	9.52
580.1032019	32.00	19.30	6.35	8.00
580.1032024	32.00	24.00	5.50	7.00
580.1025034	34.00	25.00	8.20	8.70
580.1035022	35.00	22.30	6.35	8.00
580.1038030	38.00	30.00	6.35	8.00
580.1040027	40.00	27.30	6.35	8.00
580.FJ04030	40.00	30.00	7.50	8.50
580.1042030	42.00	30.90	6.35	8.00
580.1043030	43.00	30.30	9.52	11.00
580.1044028	44.45	28.57	9.52	11.10
580.1045035	45.00	35.50	7.00	8.50
580.1046028	46.00	28.20	10.20	12.00
580.1047031	47.62	31.75	9.52	11.10
580.1048032	48.00	32.10	7.93	9.50
580.1049035	49.00	35.00	9.52	11.00
580.1012006	12.00	6.00	4.00	5.50
580.6050040	50.00	40.00	6.00	7.00
580.1050040	50.00	40.00	7.00	8.50
580.FJ05040	50.00	40.00	7.50	8.50
580.1050034	50.80	34.92	9.52	11.10
580.1051041	51.00	41.50	7.14	9.00
580.1053038	53.97	38.10	9.52	11.11
580.1054041	54.00	41.30	9.52	11.00
580.1055045	55.00	45.00	7.00	8.50
580.1057044	57.00	44.30	6.35	8.00
580.1057041	57.15	41.27	9.52	11.10
580.1060050	60.00	50.00	7.00	8.50
580.1060044	60.32	44.45	9.52	11.10
580.1061048	61.00	48.30	6.35	8.00
580.FJ06353	63.00	53.00	7.00	7.50
580.0630478	63.50	47.62	7.93	9.52
580.1064046	64.00	46.30	8.85	10.50
580.1065055	65.00	55.00	7.00	8.00
580.1066050	66.67	50.80	9.52	11.10
580.1067051	67.00	51.10	8.85	10.50
580.1069050	69.85	50.80	12.70	14.30
580.1070054	70.00	54.10	7.93	9.50
580.1070058	70.00	58.00	8.50	10.00
580.1073063	73.00	63.50	5.55	7.00
580.1073053	73.02	53.97	12.70	14.30
580.1075063	75.00	63.00	8.50	10.00
580.1076057	76.00	57.90	8.73	10.50
580.2076057	76.20	57.15	12.70	14.30
580.1079060	79.37	60.32	12.70	14.30
580.1080067	80.00	67.30	6.35	8.00
580.1080068	80.00	68.00	8.50	10.00
580.1082063	82.55	63.50	12.70	14.30
580.1083071	83.00	71.90	7.10	8.50
580.1085073	85.00	73.00	8.50	10.00
580.1086073	86.00	73.30	9.52	11.00
580.1088069	88.90	69.85	12.70	14.30
580.1089076	89.00	76.30	6.35	8.00
580.2090078	90.00	78.00	6.50	7.00
580.1090078	90.00	78.00	8.50	10.00
580.1092076	92.00	76.10	9.52	11.00

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 650



DESCRIPTION

The BECA 650 profile is a double acting composite piston seal composed of a rubber O'Ring or square ring, and a polyamide friction ring.

ADVANTAGES

The square ring does not twist
Low friction coefficient
Excellent extrusion resistance
Compatible with hydraulic oils

APPLICATIONS

Agriculture
Mobile machinery
Hydraulic cylinders

MATERIALS

Friction ring

Polyamide PA6

O'Ring or square ring

NBR 70 Shore A

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	40 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

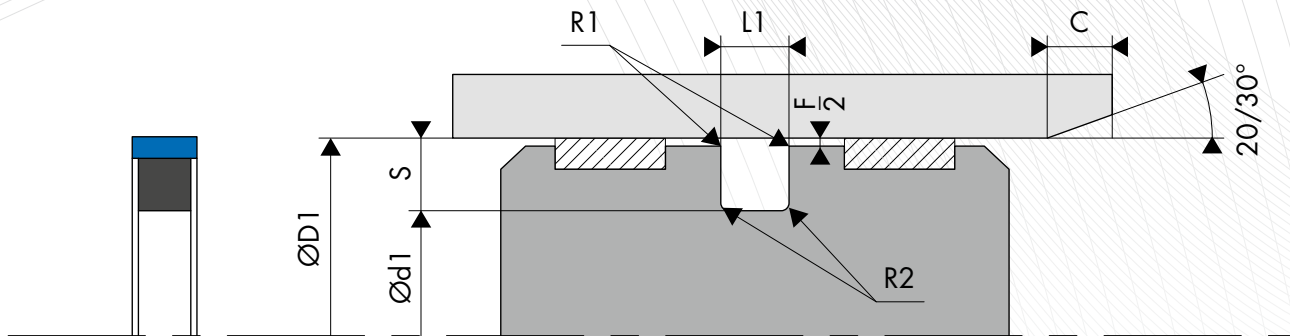
Pressure MPa	Radial gap F/2
20 MPa	0.25
35 MPa	0.20
40 MPa	0.15

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
1.30	0.30	0.20	2.00
2.00	0.30	0.20	2.00
2.60	0.30	0.20	2.00
3.25	0.30	0.20	3.00
3.90	0.30	0.20	3.00
4.55	0.30	0.30	4.00
5.20	0.30	0.30	4.50
5.85	0.30	0.40	5.00
6.50	0.30	0.40	5.50
7.80	0.30	0.60	6.00
10.40	0.30	0.80	8.00
13.00	0.30	0.80	10.00



○ INSTALLATION DIMENSIONS

Bore diameter	Groove diameter	Groove width	Radial section	Cross-section / Ring thickness
ØD1 H9	Ød1 h9	L1 0/+0.20	S	Ød2 / E
6.0 - 11.9	D1 - 2.60	1.35	1.30	1.00
12.0 - 23.9	D1 - 4.00	2.00	2.00	1.78
24.0 - 33.9	D1 - 5.20	2.60	2.60	2.00
34.0 - 45.9	D1 - 6.50	3.20	3.25	2.62
46.0 - 58.9	D1 - 7.80	3.85	3.90	3.00
59.0 - 80.9	D1 - 9.10	4.50	4.55	3.53
81.0 - 129.9	D1 - 10.20	5.10	5.20	4.00
130.0 - 199.9	D1 - 11.70	5.70	5.85	5.00
200.0 - 299.9	D1 - 13.00	6.35	6.50	5.33
300.0 - 399.9	D1 - 15.60	7.60	7.80	6.99
400.0 - 599.9	D1 - 20.80	10.10	10.40	8.40
600.0 - **	D1 - 26.00	12.60	13.00	12.00

For special applications > 40 MPa, we recommend using an H8/f8 tolerance (bore/piston) or selecting other, more suitable materials. Please contact our experts.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Polyamide friction ring - Code D6
 _____ : NBR 70 Shore A O'Ring / square ring - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 = 42.20 mm
Part number _____ : 650.050D6K6

Part number -

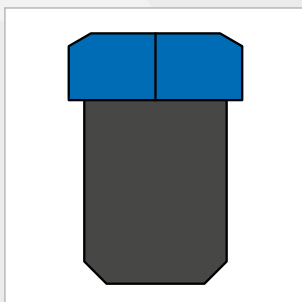
	650.	050	D6	K6
Family				
Bore diameter				
Friction ring material				
O'Ring / square ring material				

○ DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.10
650.006	6.20	3.60	1.35
650.021	21.00	17.00	2.00
650.360	360.00	344.40	7.60
650.370	370.00	354.40	7.60
650.380	380.00	364.40	7.60
650.390	390.00	374.40	7.60
650.400	400.00	379.20	10.10
650.410	410.00	389.20	10.10
650.420	420.00	399.20	10.10
650.430	430.00	409.20	10.10
650.440	440.00	419.20	10.10
650.450	450.00	429.20	10.10
650.022	22.00	18.00	2.00
650.460	460.00	439.20	10.10
650.470	470.00	449.20	10.10
650.480	480.00	459.20	10.10
650.490	490.00	469.20	10.10
650.500	500.00	479.20	10.10
650.024	24.00	18.80	2.60
650.025	25.00	19.80	2.60
650.028	28.00	22.80	2.60
650.030	30.00	24.80	2.60
650.032	32.00	26.80	2.60
650.035	35.00	28.50	3.20
650.036	36.00	29.50	3.20
650.038	38.00	31.50	3.20
650.008	8.00	5.40	1.35
650.040	40.00	33.50	3.20
650.041	41.00	34.50	3.20
650.042	42.00	35.50	3.20
650.045	45.00	38.50	3.20
650.046	46.00	38.20	3.85
650.048	48.00	40.20	3.85
650.050	50.00	42.20	3.85
650.052	52.00	44.20	3.85
650.053	53.00	45.20	3.85
650.055	55.00	47.20	3.85
650.010	10.00	7.40	1.35
650.057	57.00	49.20	3.85
650.058	58.00	50.20	3.85
650.060	60.00	50.90	4.50
650.062	62.00	52.90	4.50
650.063	63.00	53.90	4.50
650.065	65.00	55.90	4.50
650.068	68.00	58.90	4.50
650.070	70.00	60.90	4.50
650.072	72.00	62.90	4.50
650.075	75.00	65.90	4.50
650.012	12.00	8.00	2.00
650.080	80.00	70.90	4.50
650.082	82.00	71.60	5.10
650.085	85.00	74.60	5.10
650.087	87.00	76.60	5.10
650.090	90.00	79.60	5.10
650.092	92.00	81.60	5.10
650.095	95.00	84.60	5.10
650.098	98.00	87.60	5.10
650.100	100.00	89.60	5.10
650.105	105.00	94.60	5.10
650.014	14.00	10.00	2.00
650.108	108.00	97.60	5.10
650.110	110.00	99.60	5.10
650.115	115.00	104.60	5.10

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.10
650.118	118.00	107.60	5.10
650.120	120.00	109.60	5.10
650.125	125.00	114.60	5.10
650.127	127.00	116.60	5.10
650.130	130.00	118.30	5.70
650.132	132.00	120.30	5.70
650.135	135.00	123.30	5.70
650.015	15.00	11.00	2.00
650.138	138.00	126.30	5.70
650.140	140.00	128.30	5.70
650.144	144.50	132.80	5.70
650.145	145.00	133.30	5.70
650.150	150.00	138.30	5.70
650.155	155.00	143.30	5.70
650.156	156.00	144.30	5.70
650.158	158.70	147.00	5.70
650.160	160.00	148.30	5.70
650.164	164.00	152.30	5.70
650.016	16.00	12.00	2.00
650.165	165.00	153.30	5.70
650.166	166.00	154.30	5.70
650.170	170.00	158.30	5.70
650.175	175.00	163.30	5.70
650.177	177.00	165.30	5.70
650.180	180.00	168.30	5.70
650.185	185.00	173.30	5.70
650.190	190.00	178.30	5.70
650.195	195.00	183.30	5.70
650.200	200.00	187.00	6.35
650.018	18.00	14.00	2.00
650.205	205.00	192.00	6.35
650.210	210.00	197.00	6.35
650.215	215.00	202.00	6.35
650.216	216.00	203.00	6.35
650.220	220.00	207.00	6.35
650.225	225.00	212.00	6.35
650.230	230.00	217.00	6.35
650.240	240.00	227.00	6.35
650.250	250.00	237.00	6.35
650.260	260.00	247.00	6.35
650.020	20.00	16.00	2.00
650.268	268.00	255.00	6.35
650.270	270.00	257.00	6.35
650.280	280.00	267.00	6.35
650.290	290.00	277.00	6.35
650.300	300.00	284.40	7.60
650.310	310.00	294.40	7.60
650.320	320.00	304.40	7.60
650.330	330.00	314.40	7.60
650.340	340.00	324.40	7.60
650.350	350.00	334.40	7.60

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.



PISTON SEALS

BECA 655



DESCRIPTION

The BECA 655 profile is a double acting composite piston seal composed of a flexible rubber ring and a polyamide friction ring with a step cut.

ADVANTAGES

The square ring does not twist
Low friction coefficient
Excellent extrusion resistance
Compatible with hydraulic oils

APPLICATIONS

Agriculture
Mobile machinery
Hydraulic cylinders

MATERIALS

Friction ring

Polyamide PA6
Polyoxymethylene (POM)

Profiled seal

NBR 70 Shore A

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +100°C
Pressure	50 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

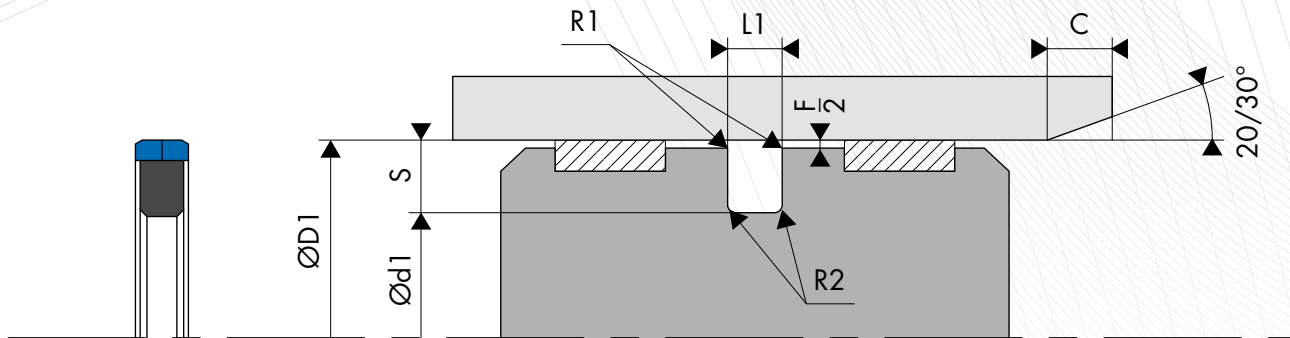
Pressure MPa	Radial gap F/2
20 MPa	0.25
35 MPa	0.20
40 MPa	0.15
50 MPa	0.10

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
5.50	0.30	0.50	3.00
7.75	0.30	0.90	4.00
10.50	0.30	0.90	5.00



○ INSTALLATION DIMENSIONS

Groove diameter Ød1 h9	Groove width L1 0/+0.20	Radial section S
D1 - 11.00	4.20	5.50
D1 - 15.50	6.30	7.75
D1 - 21.00	8.10	10.50

For special applications > 40 MPa, we recommend using an H8/f8 tolerance (bore/piston) or selecting other, more suitable materials. Please contact our experts.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Polyoxymethylene (POM) friction ring - Code HC
 _____ : NBR 70 Shore A profiled seal - Code K6
 Bore diameter _____ : ØD1 = 100.00 mm
 Groove diameter _____ : Ød1 + 79.00 mm
 Part number _____ : 655.100HCK6

Part number -

	655.	100	HC	K6
Family				
Bore diameter				
Friction ring material				
Profiled seal material				

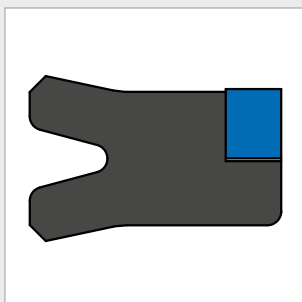
○ DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.10
655.070	70.00	49.00	8.10
655.115	115.00	94.00	8.10
655.120	120.00	99.00	8.10
655.125	125.00	104.00	8.10
655.130	130.00	109.00	8.10
655.140	140.00	119.00	8.10
655.150	150.00	129.00	8.10
655.160	160.00	139.00	8.10
655.170	170.00	149.00	8.10
655.180	180.00	159.00	8.10

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.10
655.190	190.00	169.00	8.10
655.075	75.00	54.00	8.10
655.080	80.00	59.00	8.10
655.085	85.00	64.00	8.10
655.090	90.00	69.00	8.10
655.095	95.00	74.00	8.10
655.100	100.00	79.00	8.10
655.105	105.00	84.00	8.10
655.110	110.00	89.00	8.10

The figures highlighted in bold correspond to the bore diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.

Other profiles



PISTON SEALS

BECA 235P/AE



DESCRIPTIONS

The BECA 235P/AE profile is a rubber U-ring type single acting piston seal with matching lips and a POM back-up ring.

ADVANTAGES

Optimised sealing effect
Excellent resistance to high temperatures depending on the type of material chosen
Good extrusion resistance

APPLICATIONS

Mobile hydraulics
Machine tools
Presses
Standard cylinders

MATERIALS

Profiled seal

NBR 70 Shore A
NBR 85 Shore A
FKM 85 Shore A

Back-up ring

Polyoxymethylene - POM
Bronze-filled PTFE

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	25 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

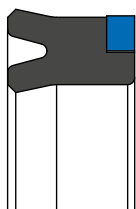
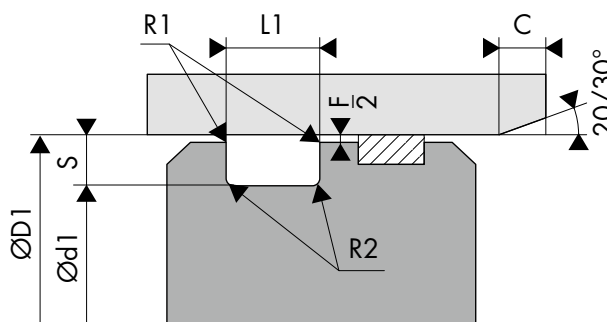
Pressure MPa	Radial gap F/2
2.5 MPa	0.45
5.0 MPa	0.35
7.5 MPa	0.30
10.0 MPa	0.25
15.0 MPa	0.20
25.0 MPa	0.10

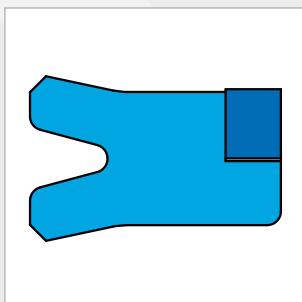
SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.50	0.20	0.40	2.00
5.00	0.40	0.60	2.50
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00





PISTON SEALS

BECA 335P/AE



DESCRIPTIONS

The BECA 335P/AE profile is a polyurethane U-ring type single acting piston seal with matching lips and a POM back-up ring.

ADVANTAGES

Optimised sealing effect
Excellent abrasion resistance
Very good extrusion resistance
Very good wear resistance

APPLICATIONS

Agriculture
Mobile machinery
Lifting systems
Injection presses
Hydraulic cylinders

MATERIALS

Profiled seal

PU 93 Shore A - Blue
PU 96 Shore A - Blue
High temp. PU 96 Shore A - Beige

Back-up ring

Polyoxymethylene - POM

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	45 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

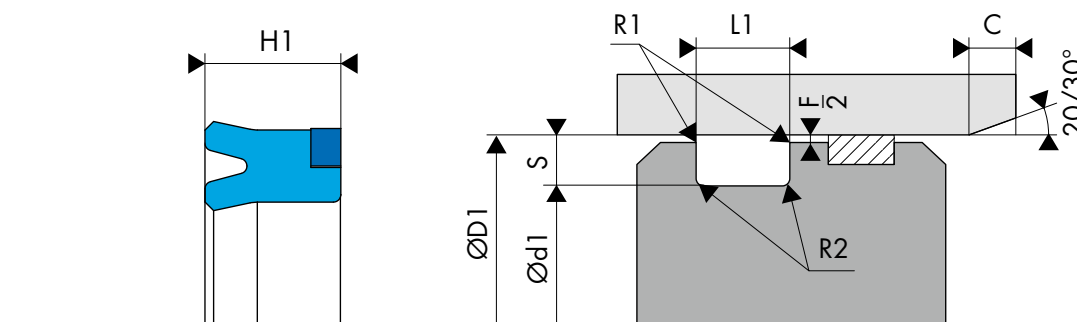
Bore diameter ØD1	Radial extrusion gap F/2					
	≤ 5 MPa	≤ 10 MPa	≤ 20 MPa	≤ 30 MPa	≤ 40 MPa	≤ 45 MPa
≤ 60 mm	0.40	0.30	0.20	0.15	0.10	0.07
> 60 mm	0.50	0.40	0.30	0.20	0.15	0.10

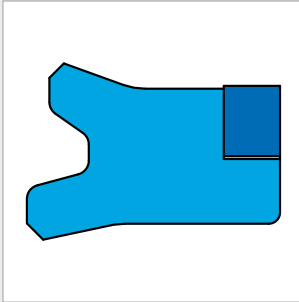
SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

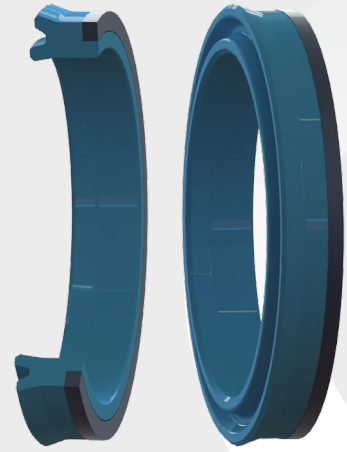
Radial section S	Radius R1	Radius R2	Chamfer C
3.00	0.20	0.40	2.00
4.00	0.20	0.40	2.50
5.00	0.40	0.60	3.00
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00





PISTON SEALS

BECA 336/AE



DESCRIPTIONS

The BECA 336/AE profile is a U-ring type single acting piston seal with offset lips composed of a polyurethane profile ring and a POM back-up ring on the back.

ADVANTAGES

Optimised sealing effect at both high and low pressures

Excellent abrasion and wear resistance

Excellent extrusion resistance

APPLICATIONS

Mobile hydraulics

Injection presses

Machine tools

Presses

Hydraulic cylinders

MATERIALS

Profiled seal

PU 93 Shore A - Blue

PU 96 Shore A - Blue

High temp. PU 96 Shore A - Beige

Back-up ring

Polyoxymethylene - POM

Other grades of materials are available.
Please contact our experts.

TECHNICAL DATA

Temperature	-30°C / +110°C
Pressure	50 MPa
Speed	0.5 m/sec
Media	Mineral hydraulic oils

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

EXTRUSION GAPS

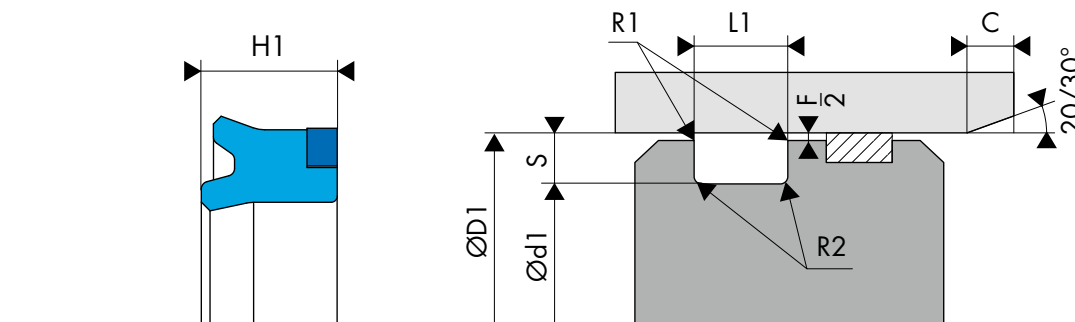
Bore diameter ØD1	Radial extrusion gap F/2					
	≤ 5 MPa	≤ 10 MPa	≤ 20 MPa	≤ 30 MPa	≤ 40 MPa	≤ 50 MPa
≤ 60 mm	0.40	0.30	0.20	0.15	0.10	0.07
> 60 mm	0.50	0.40	0.30	0.20	0.15	0.10

SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.1 - 0.4 µm	≤1.6 µm	≤3.2 µm
Rz	0.63 - 2.5 µm	≤6.3 µm	≤10.0 µm
Rmax	1.0 - 4.0 µm	≤10.0 µm	≤16.0 µm

CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
3.00	0.20	0.40	2.00
4.00	0.20	0.40	2.50
5.00	0.40	0.60	3.00
7.50	0.80	1.00	4.00
10.00	0.80	1.00	5.00



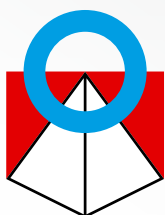


www.francejoint.com



www.francejoint.com

QUALITY & EXPERTISE
FOR YOUR SEALING NEEDS



FRANCEJOINT
SEALING SYSTEMS

FRANCE JOINT SAS

Zone Artisanale Le Mortier - B.P. 50009 - Cugand - 85613 Montaigu Cedex - France

Ph. **+33 (0)2 51 42 13 76** - Fax **+33 (0)2 51 43 61 14**

Email: contact@francejoint.fr - Website: www.francejoint.com

SAS CAPITAL 1,000,000 Euro - RCS 450 136 809 - VAT No. FR 10 450 136 809 - SIRET 450 136 809 00016 - FIN 2219 Z